Fragilité et sarcopénie: définition, diagnostic, prise en charge

Matteo Cesari, MD, PhD

Paris – 17 Mars 2017

- Epidémiologie du vieillissement
  - Les scénarios qui changent
- La fragilité
  - Définition
  - Les outils pour mesurer la fragilité
  - Fragilité et rapport avec la dépendance
  - Traitement de la fragilité
- La sarcopénie
  - Définition
  - Comment mesurer la sarcopénie
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INTERNATIONAL

105-Year-Old Cyclist Rides 14 Miles In An Hour En Route To A World Record

January 4, 2017 · 2:44 PM ET

Robert Marchand (age 105 yo)
22.547 kilometers in an hour

SPECIAL ARTICLES

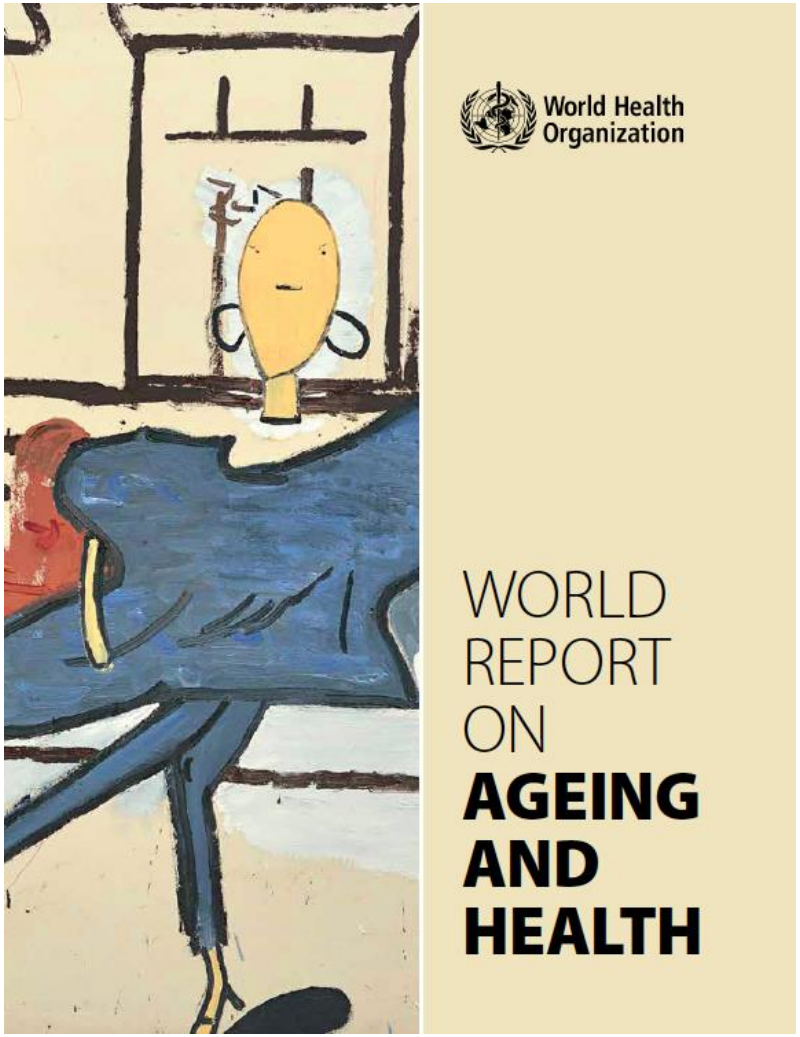
The End of the Disease Era

Mary E. Tinetti, MD, Terri Fried, MD

The time has come to abandon disease as the focus of medical care. The changed spectrum of health, the complex interplay of biological and nonbiological factors, the aging population, and the interindividual variability in health priorities render medical care that is centered on the diagnosis and treatment of individual diseases at best out of date and at worst harmful. A primary focus on disease may inadvertently lead to undertreatment, overtreatment, or mistreatment. The numerous strategies that have evolved to address the limitations of the disease model, although laudable, are offered only to a select subset of persons and often further fragment care. Clinical decision making for all patients should be predicated on the attainment of individual goals and the identification and treatment of all modifiable biological and nonbiological factors, rather than solely on the diagnosis, treatment, or prevention of individual diseases. Anticipated arguments against a more integrated and individualized approach range from concerns about medicalization of life problems to "this is nothing new" and "resources would be better spent determining the underlying biological mechanisms." The perception that the disease model is "truth" rather than a previously useful model will be a barrier as well. Notwithstanding these barriers, medical care must evolve to meet the health care needs of patients in the 21st century. **Am J Med. 2004;116:179–185.**

"…The time has come to abandon disease as the primary focus of medical care. When disease became the focus of Western medicine in the 19th and early 20th century, the average life expectancy was 47 years and most clinical encounters were for acute illness. Today, the average life expectancy in developed countries is 74 years and increasing, and most clinical encounters are for chronic illnesses or non-disease-specific complaints…"

Aging and health-care policies



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JAMDA 14 (2013) 392–397

JAMDA

journal homepage: www.jamda.com

Special Article

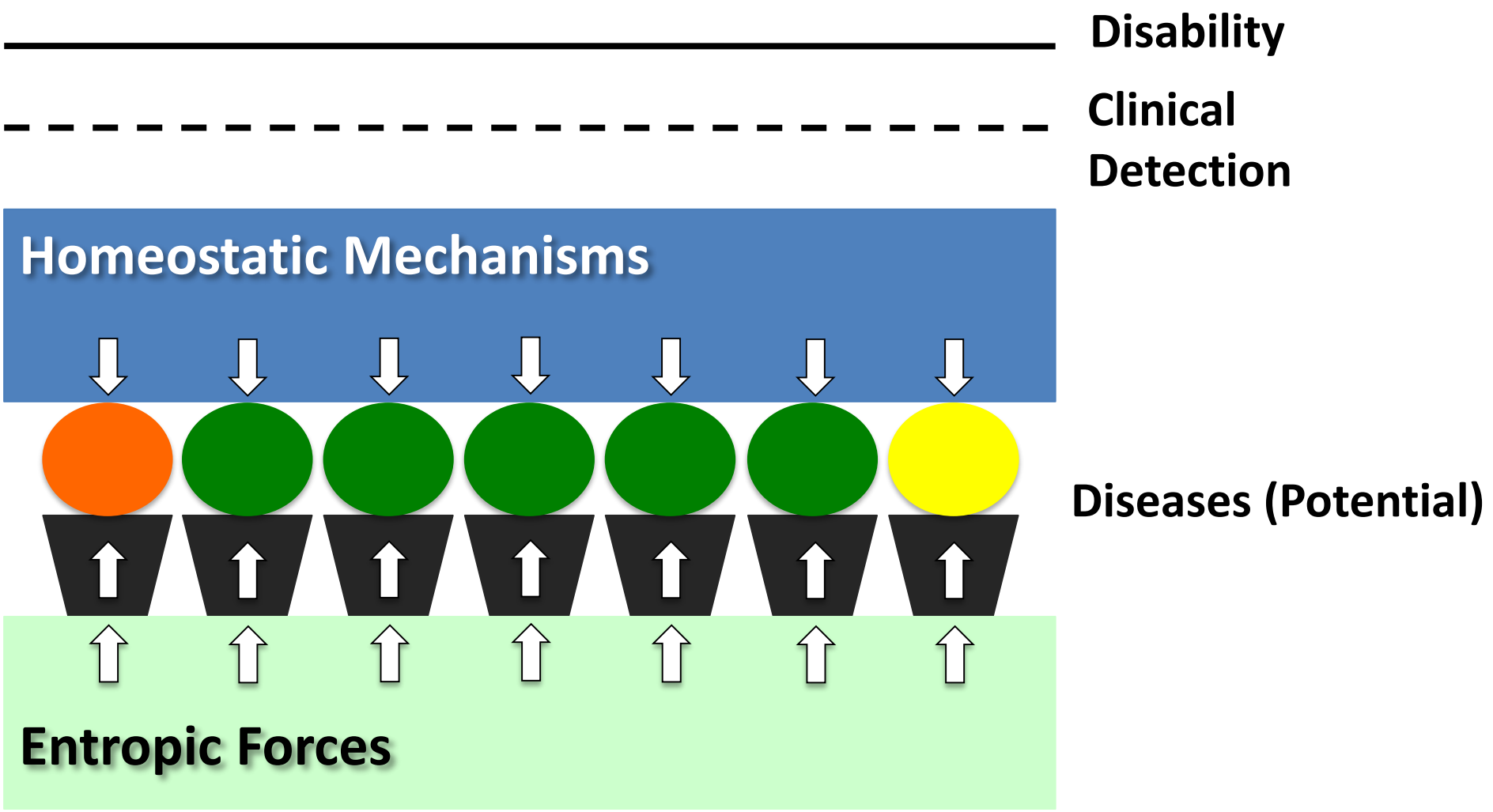
Frailty Consensus: A Call to Action

John E. Morley MB, BCh [a,*], Bruno Vellas MD [b,c], G. Abellan van Kan MD [b,c], Stefan D. Anker MD, PhD [d,e], Juergen M. Bauer MD, PhD [f], Roberto Bernabei MD [g], Matteo Cesari MD, PhD [b,c], W.C. Chumlea PhD [h], Wolfram Doehner MD, PhD [d,i], Jonathan Evans MD [j], Linda P. Fried MD, MPH [k], Jack M. Guralnik MD, PhD [l], Paul R. Katz MD, CMD [m], Theodore K. Malmstrom PhD [a,n], Roger J. McCarter PhD [o], Luis M. Gutierrez Robledo MD, PhD [p], Ken Rockwood MD [q], Stephan von Haehling MD, PhD [r], Maurits F. Vandewoude MD, PhD [s], Jeremy Walston MD [t]

Un syndrome médical avec plusieurs causes et contributeurs et qui se caractérise par la diminution de la force, de l'endurance et des réserves physiologiques.

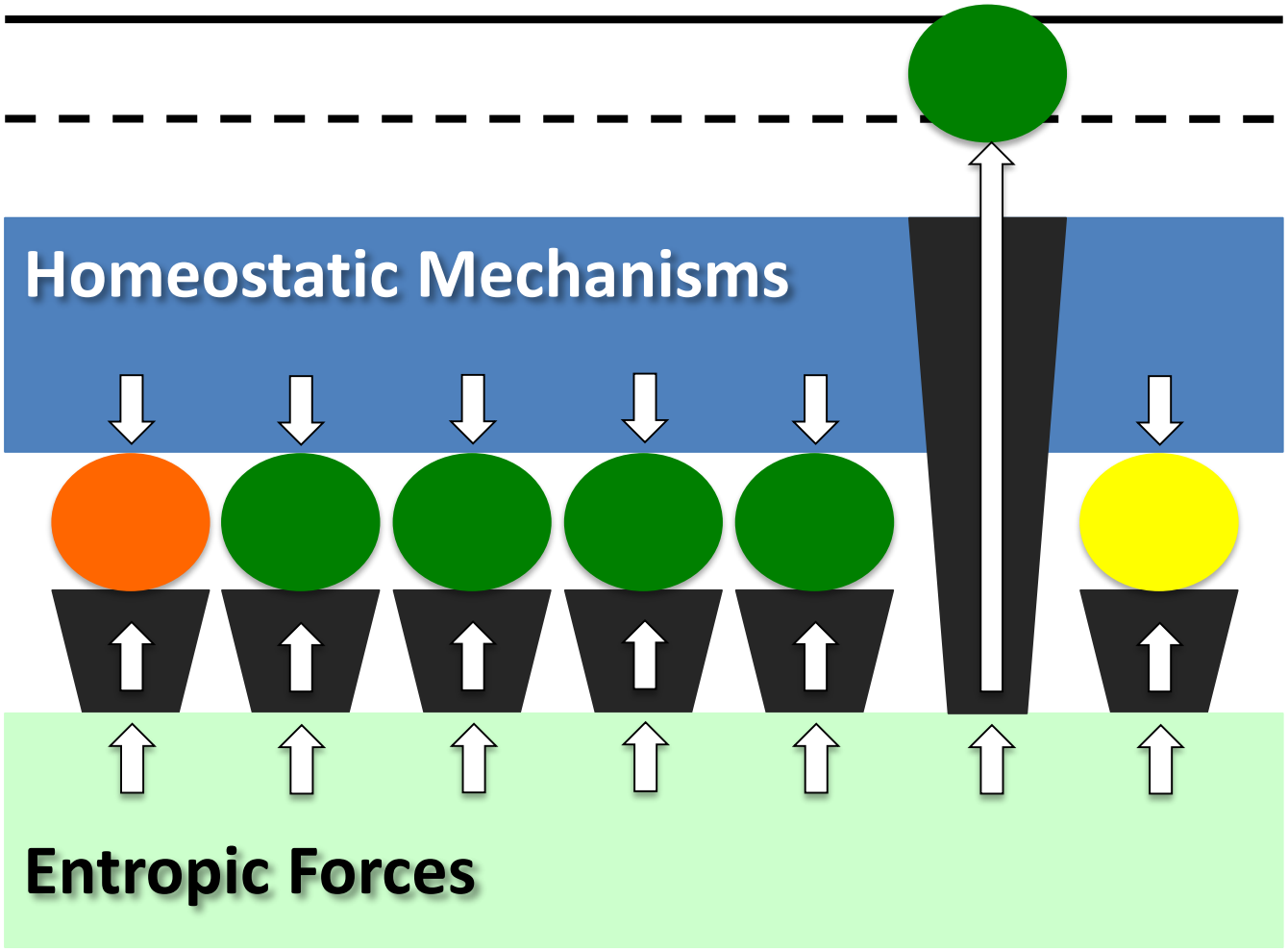
La fragilité augmente la vulnérabilité d'un individu à développer évènements cliniques défavorables (dépendance, décès)

A. Homeostatic Equilibrium



Studenski S. *J Nutr Health Aging* 2009;13:729-32
Ferrucci L et al. *Genus* 2005;LXI:39-53

B. Disease Model (Young and Middle Age)



Studenski S. *J Nutr Health Aging* 2009;13:729-32
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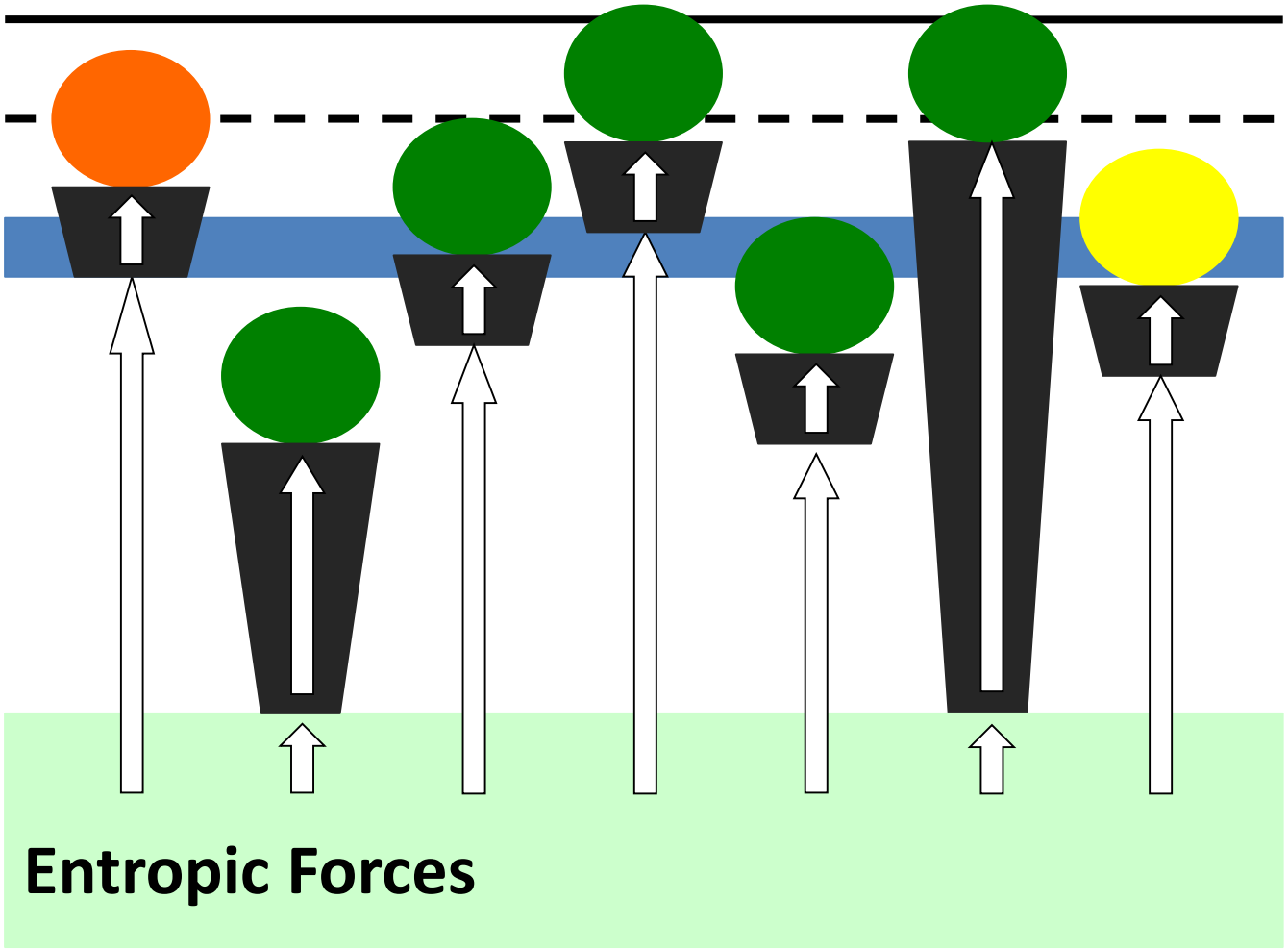
C. Age-related Frailty



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Severe disease of the central nervous system may follow infection with several E.C.H.O. viruses, causing ataxia, vertigo, and nystagmus. Undifferentiated febrile illness with or without a rash is commonly seen with types 4, 6, 9, 14, and 16, and sometimes 2, 11, and 18. E.C.H.O. viruses, usually type 18 and occasionally 8, 11, 14, and 20, have also been isolated from cases of infantile gastroenteritis, but the causal relationship is by no means so clear as in the cases of aseptic meningitis. World-wide in distribution, E.C.H.O. virus infections, whether sporadic or epidemic, are commoner in the spring and summer than at other seasons. These viruses can be recovered from the nasopharyngeal secretions and faeces, and it is probable that these are the main source of transmitted infection.

In this week's issue of the *B.M.J.* Squadron-Leader L. J. German and his colleagues describe at page 742 an outbreak of E.C.H.O. type 5 infection in a maternity unit in Singapore. Sixty-four cases were observed between July and October 1965, of which 56 were among infants. All had a pyrexia of 99–103° F. (37.2–39.4° C.), the onset usually being between the fourth and eighth day of life. A faint pink maculopapular rash was seen in 20 infants, being more pronounced on the limbs and buttocks but present also on the trunk and face. Thirteen infants had loose, offensive stools and four others passed blood and mucus. The eight adults, seven of whom were mothers of the infants, complained of malaise, fever, severe headache, and vomiting. They also developed a rash, which was more persistent than in the infants. E.C.H.O. type 5 virus was detected in 31 cases. All patients recovered, and the outbreak lasted 16 weeks. A similar outbreak was reported by E. W. Hart and his colleagues[4] from a London maternity unit in 1962. The symptoms then were fever, diarrhoea, lymphadenopathy, and an enlarged spleen, but no rashes were observed.

Virological investigations are particularly valuable in such circumstances, for the prognosis of E.C.H.O. virus infections generally is good, and during an outbreak in a maternity home this is comforting news to have. On the other hand, E.C.H.O. viruses can cause serious disease, particularly in the very young,[5] but they do not appear to cause such severe disease in this age group as do Coxsackie B viruses.[4]

Old and Frail

One of the miracles of our time is the increase in the average length of life. In England and Wales, for instance, the expectation of life at birth has risen by 20 years since 1900, from about 50 to about 70 years.[1] Eileen M. Brooke[2] puts it another way when she says that in 1963 in England and Wales one in every eight persons was aged 65 or more, and if the trend is continued by 1982 the ratio will be one in six. Not only will the ratio of retired to working people be adversely affected, but the number of old people in absolute terms will have reached the formidable total of 7.4 millions in 1982. There will be proportionately fewer persons capable of looking after their aged kin, and for a variety of socio-economic reasons there will probably be fewer still able to do so even if they wished.

Two recent papers, one complementing the other, highlight the present inadequacies for the care of the aged and underline the danger in a failure to plan for the future. F. Allen Binks[3] drew attention to the misuse of geriatric units, and criticized general hospitals for their failure to share the burden of the care of the aged. He implied that too many people who work in these hospitals fail to accept the responsibility they should for confused, restless, incontinent old patients, whom they shrug off after a period in their care as a "chronic patient" and "no longer a responsibility of this hospital." He also made a telling comparison between the understaffed geriatric unit working at 97% bed occupancy and the 70% occupancy of "acute" hospitals where there is no staff shortage. How, he argues, in the circumstances can there be complaints that the "acute" beds are being blocked by geriatric patients? Yet in an area of which he was writing "an excess of 750 acute beds and a deficiency of 270 geriatric beds is being changed to one with an excess of 1,025 acute beds and a deficiency of 245 geriatric beds."

In the second paper R. W. Parnell[4] reports on two years' experience in a psychogeriatric unit which takes three-quarters of the patients over the age of 65 admitted to a mental hospital. He makes the most important point that, "Even today regional board psychiatric and geriatric advisory committees may act in isolation from each other, forgetting that the common focus of their attention is the provision of hospital care for old people, not for bodiless minds on the one hand or mindless bodies on the other." He goes on to turn the knife and points out that because of the grim shortage of beds for sick old people "they tend to flow into any vacant bed, irrespective of administrative edict, and are usually labelled selectively from their multiple pathology, with the diagnosis best calculated to gain admission by a particular hospital." It is indeed a curious perversion of the legend of Procrustes: instead of the patient being shaped to the bed, the bed is shaped to the patient. The pressure on mental hospital beds from general hospitals, geriatric units, and elsewhere was not foreseen a few years ago.[5,6] As Parnell observes, this is in itself sufficient to upset the forecast that by the mid-1970s we might need only half as many beds for mental illness. Many mental hospital psychiatrists would agree with Parnell's observation.

Binks and Parnell paint on a small canvas framed by the limits of their own experience. Miss Eileen M. Brooke,[2] however, is able to project her statistical data on to a national screen. And some of her data are particularly pertinent. For example, a census of patients in psychiatric hospitals at the end of 1963 showed that there were 51,616 persons aged 65 and over. One in every 109 persons in the population as a whole was resident in a mental hospital or unit. Of all mental hospital patients 39% were aged 65 and over, and of these nearly half were 75 or more. Between 1954 and 1963 the numbers aged 65 and over in psychiatric hospitals in England and Wales increased by 6,300, representing an increase from 30 to 39% of the total hospital population. And the shift towards more older patients in these hospitals is most unlikely to be reversed.

What is perhaps the most alarming statistic is that 11% of the men and 6% of the women die within a month of

[1] *The Registrar General's Statistical Review of England and Wales for the Year 1965*, Part 2, Tables, Population. 1967. H.M.S.O.
[2] Brooke, E. M., in *Psychiatric Disorders in the Aged*, p. 214. Symposium held at Royal College of Physicians, 1965. Geigy (U.K.) Limited, on behalf of the World Psychiatric Association. 1967. Manchester
[3] Binks, F. A., *Brit. med. J.*, 1968, **1**, 269.
[4] Parnell, R. W., *Geront. Clin.*, 1968, **10**, 30.
[5] Norton, A., *Brit. med. J.*, 1961, **1**, 528.
[6] Tooth, G. C., and Brooke, E. M., *Lancet*, 1961, **1**, 710.

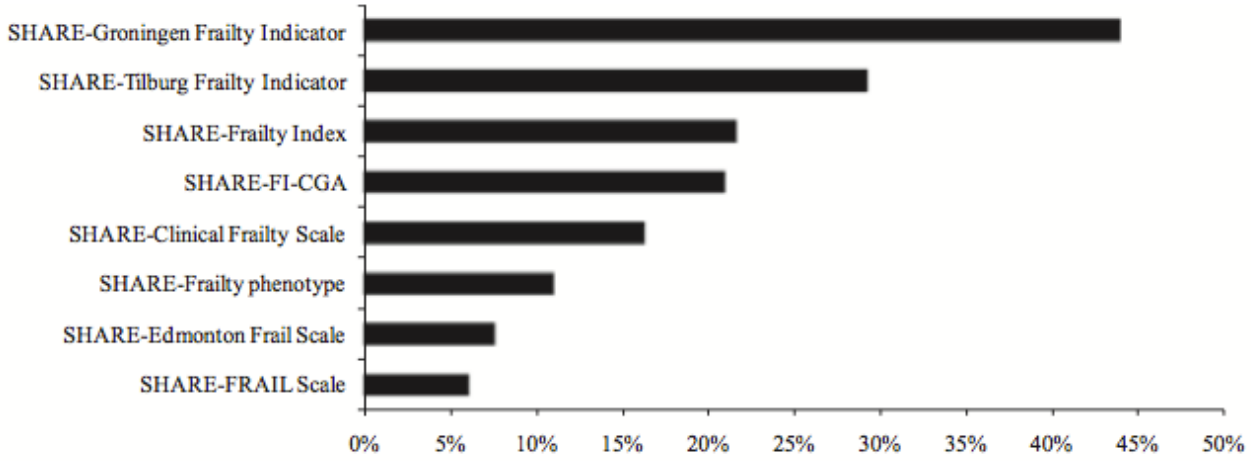

Figure 1. Prevalence of frailty. SHARE = Survey of Health, Ageing and Retirement in Europe; FI-CGA = Frailty Index based on a Comprehensive Geriatric Assessment.

Table 3. Agreement of Survey of Health, Ageing and Retirement in Europe Frailty Scales (Cohen Kappa Statistic)

	Groningen Frailty Indicator	Tilburg Frailty Indicator	Frailty Index	FI-CGA	Clinical Frailty Scale	Frailty phenotype	Edmonton Frail Scale
Tilburg Frailty Indicator	0.50						
Frailty Index	0.46	0.52					
FI-CGA	0.46	0.52	0.82				
Clinical Frailty Scale	0.30	0.38	0.61	0.57			
Frailty phenotype	0.25	0.37	0.51	0.51	0.45		
Edmonton Frail Scale	0.18	0.27	0.45	0.46	0.52	0.55	
FRAIL scale	0.13	0.27	0.28	0.29	0.27	0.46	0.45

FI-CGA = Frailty Index based on a Comprehensive Geriatric Assessment.

Theou O et al. *J Am Geriatr Soc* 2013;61:1537-1551

JAMDA 14 (2013) 392–397

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Special Article

Frailty Consensus: A Call to Action

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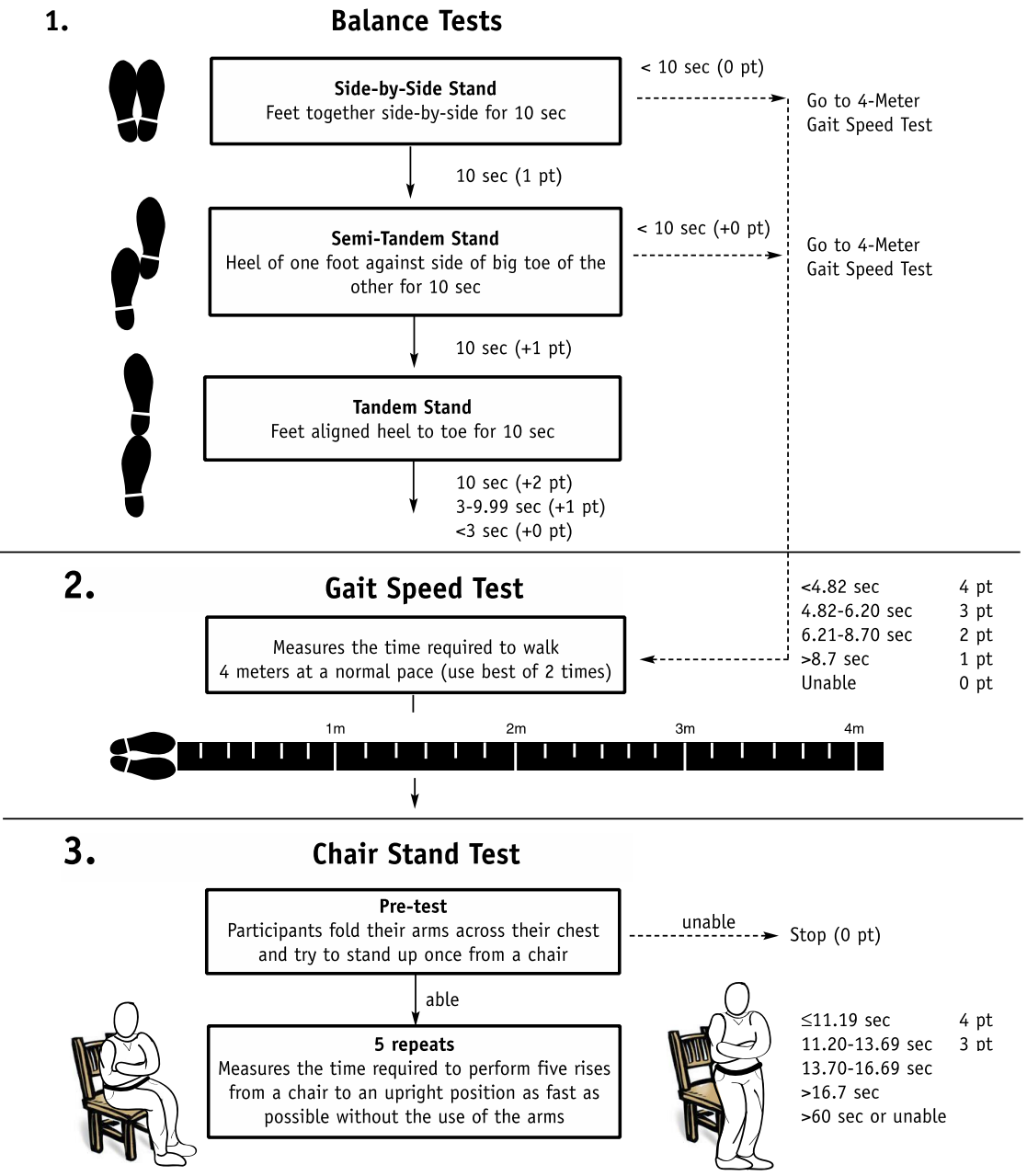
Short Physical Performance Battery



Guralnik JM et al.
J Gerontol 1994;49:M85-94

Guralnik JM et al.
N Engl J Med 1995;332:556-61

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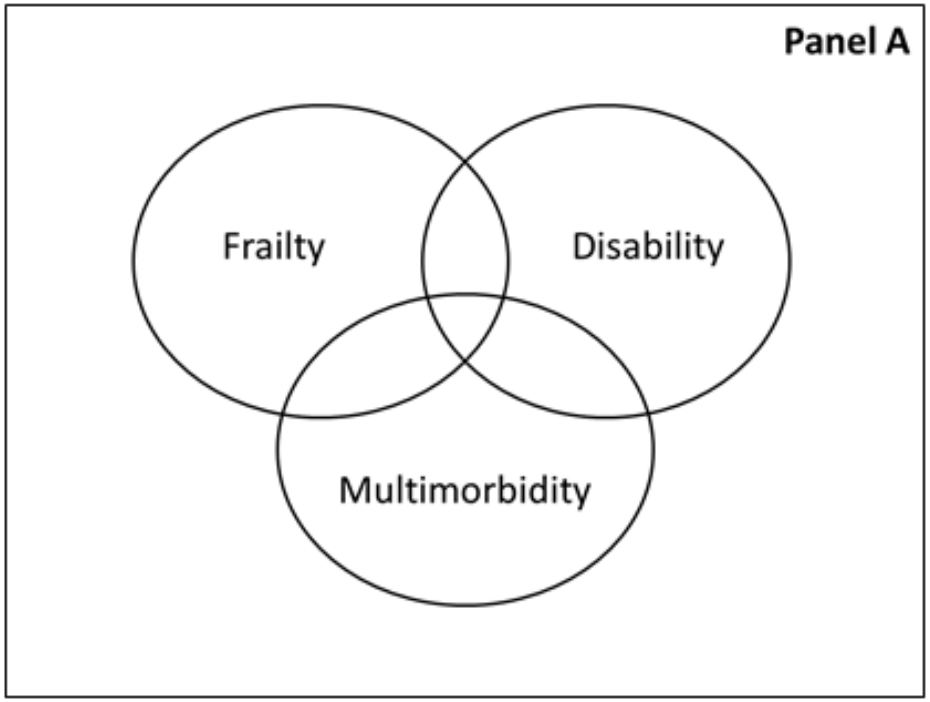

Cesari et al.
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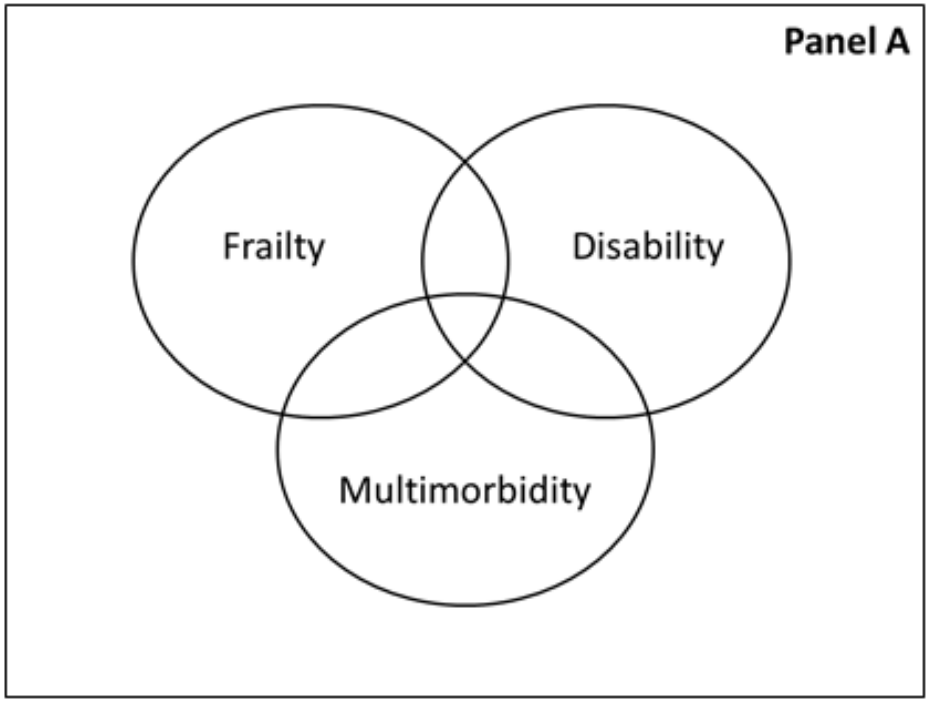

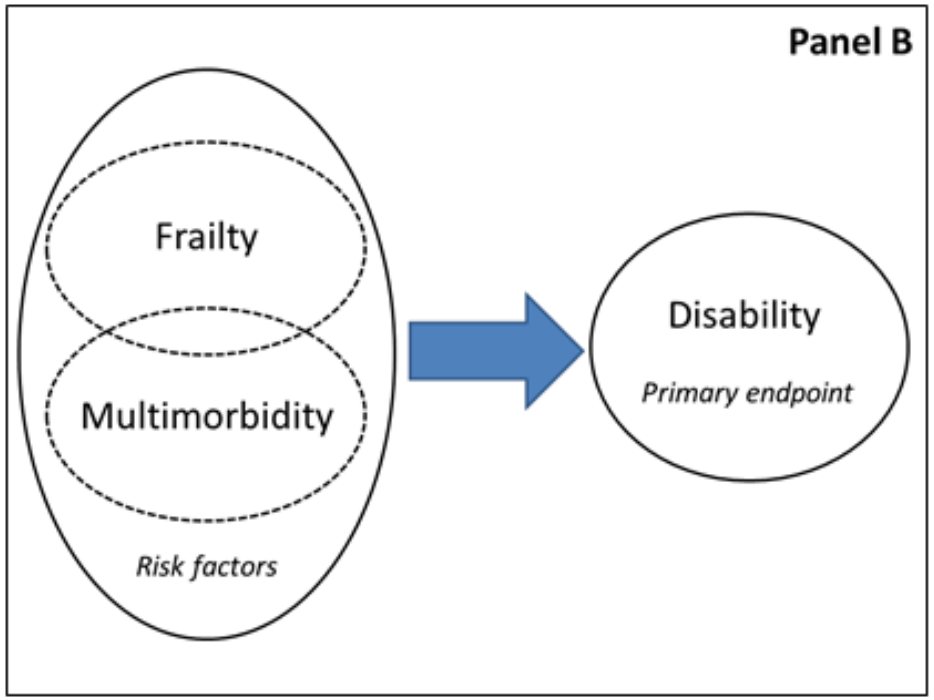

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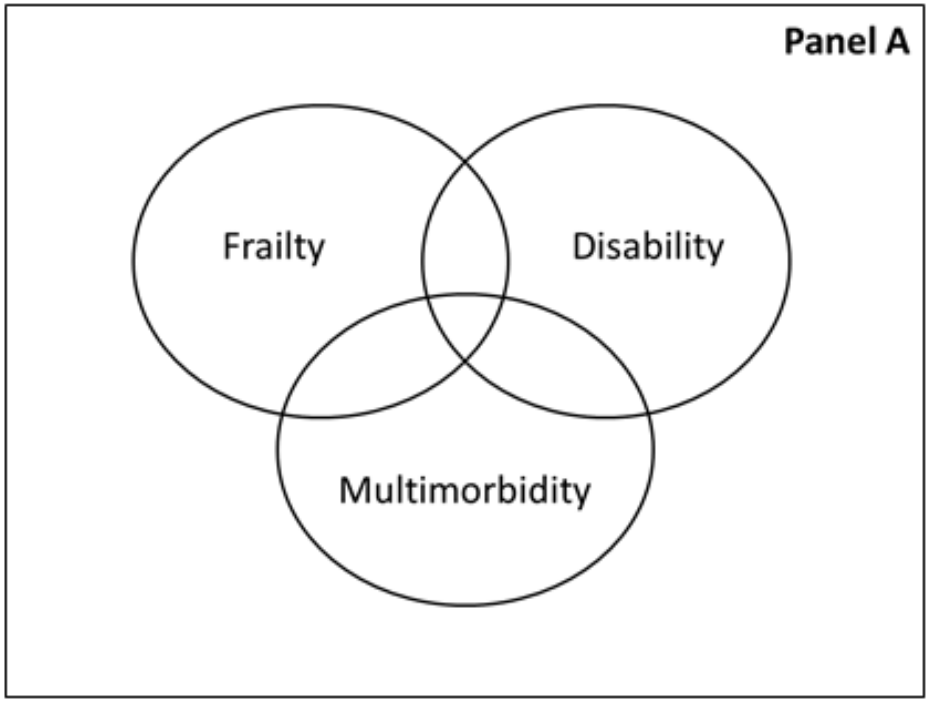

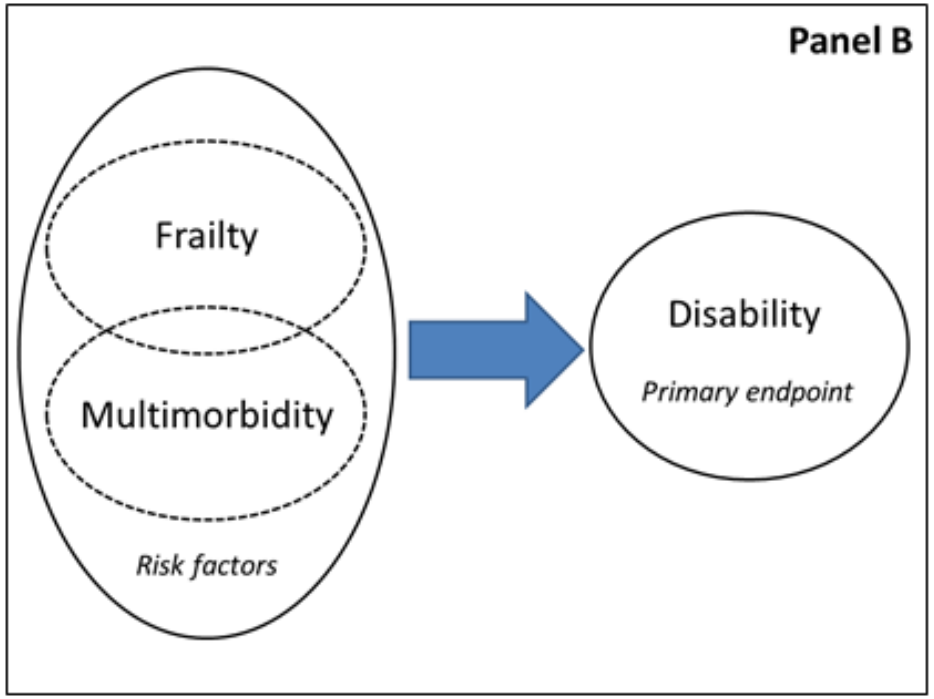

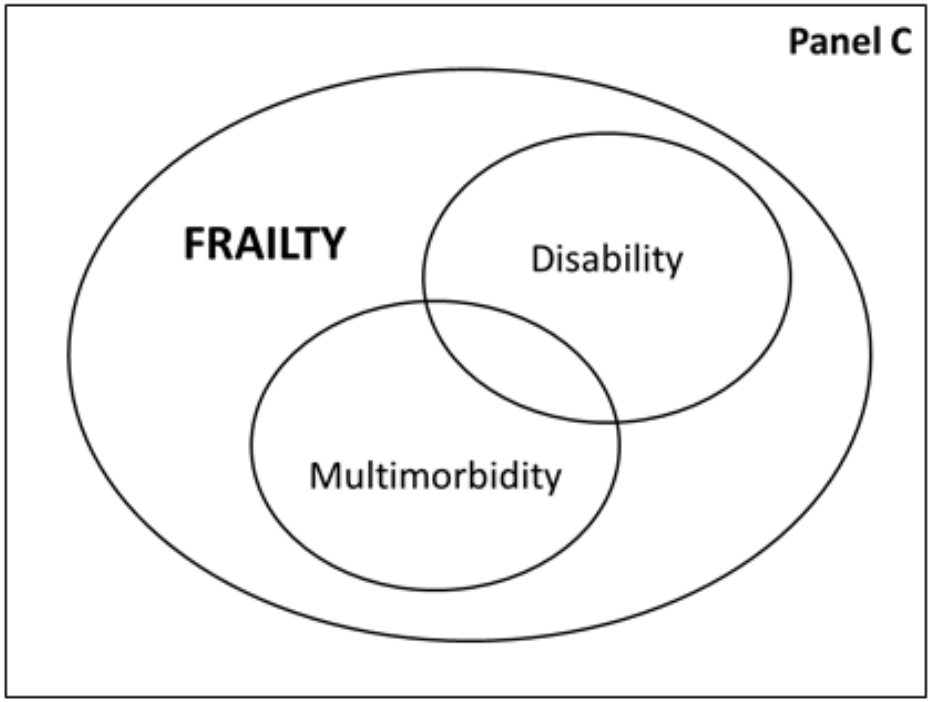

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Special Article

Frailty: An Emerging Public Health Priority

Matteo Cesari MD, PhD [a,b,*], Martin Prince MD [c], Jotheeswaran Amuthavalli Thiyagarajan MD, PhD [d], Islene Araujo De Carvalho MD [e], Roberto Bernabei MD, PhD [f], Piu Chan MD, PhD [g], Luis Miguel Gutierrez-Robledo MD, PhD [h], Jean-Pierre Michel MD [i], John E. Morley MB, BCh [j], Paul Ong PhD [k], Leocadio Rodriguez Manas MD, PhD [l], Alan Sinclair FRCP, MD [m], Chang Won Won MD, PhD [n], John Beard PhD [e], Bruno Vellas MD [a,b]

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Reflections in Internal Medicine

The geriatric management of frailty as paradigm of "The end of the disease era"

Matteo Cesari [a,b,*], Emanuele Marzetti [c], Ulrich Thiem [d], Mario Ulises Pérez-Zepeda [e], Gabor Abellan Van Kan [a], Francesco Landi [c], Mirko Petrovic [f], Antonio Cherubini [g], Roberto Bernabei [c]

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[f] Department of Geriatrics, Ghent University Hospital, Ghent, Belgium
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Fit for Frailty

Consensus best practice guidance for the care of older people living with frailty in community and outpatient settings

A report by the

British Geriatrics Society

in association with the Royal College of General Practitioners and Age UK

June 2014

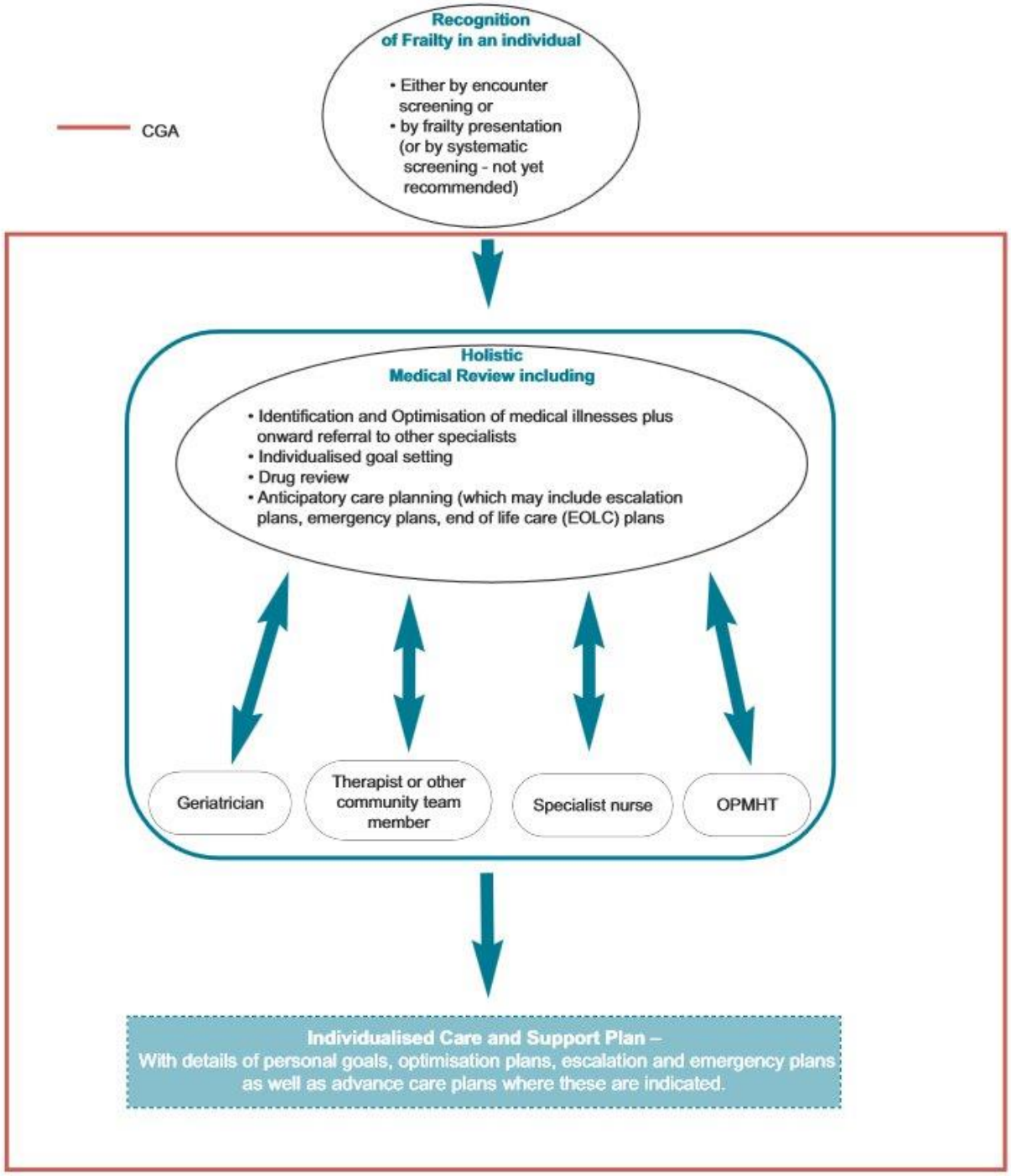
3. Recognising and identifying frailty in individuals

Recommendations

- Older people should be assessed for the possible presence of frailty during all encounters with health and social care professionals. Slow gait speed, the PRISMA questionnaire, the timed-up-and-go test are recommended as reasonable assessments. The Edmonton Frail Scale is recommended in elective surgical settings.

- Provide training in frailty recognition to all health and social care staff who are likely to encounter older people.

- Do not offer routine population screening for frailty.



Fit for Frailty

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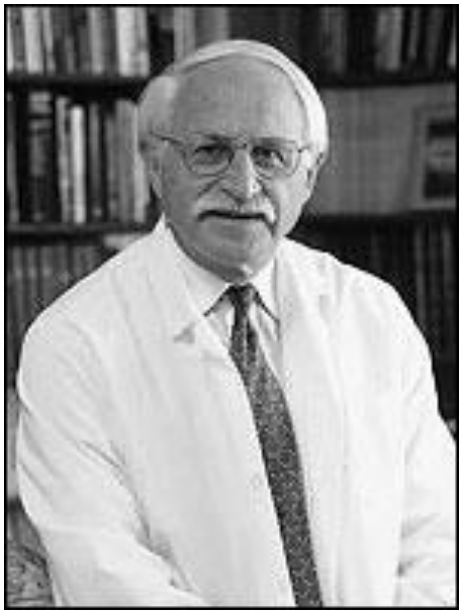
La sarcopénie



Irwin Rosenberg

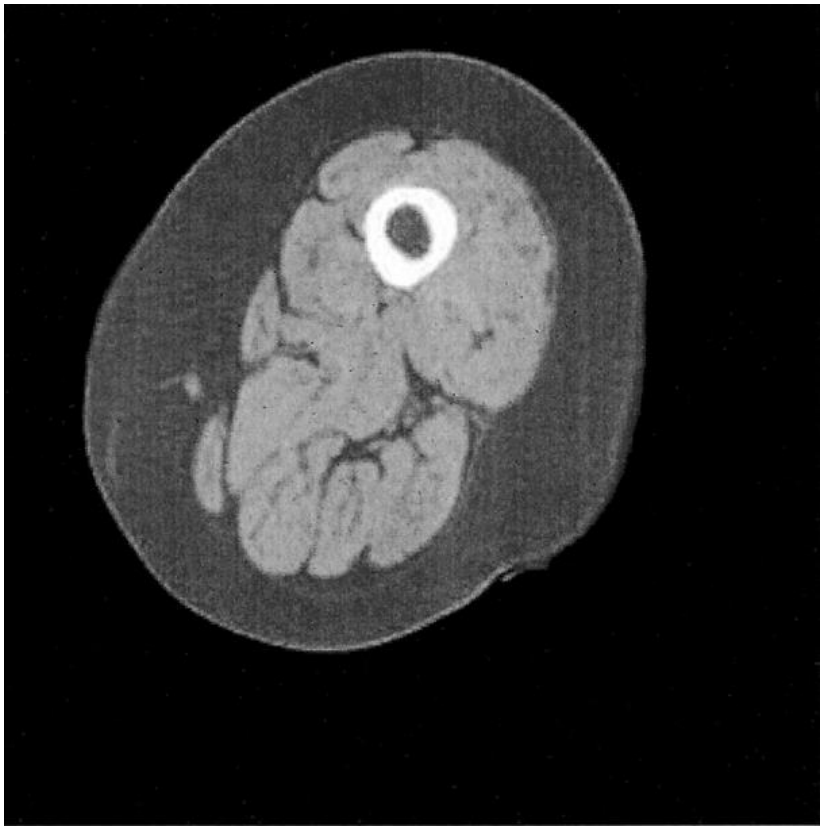
Étymologiquement du grec ***sarx*** qui signifie chair et ***penia*** qui signifie diminution

Sarcopénie = « **perte de chair** »

La diminution progressive de la masse musculaire (ou dystrophie musculaire) liée à l'âge et au vieillissement.

Sarcopénie

25 ans



75 ans

Roubenoff R. *J Gerontol A Biol Sci Med Sci* 2003;58A:1012-1017

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Assessment of skeletal muscle – 1

	Strengths	Weaknesses
MRI	Best resolution Lean + Adipose tissues Muscle quality	Highly expensive Radiation Time-consuming Space requirements Technically difficult
CT	Lean + Adipose tissues Muscle quality	Specific body district Radiation Time-consuming Space requirements Technically difficult
Creatinine excretion	Direct measure of total body muscle mass	Time-consuming Diet restrictions before testing Complex procedure Daily variation No specific body district

Cesari M et al. *Open Geriatr Med J* 2008;1:14-23
Pahor M et al. *J Nutr Health Aging* 2009;13:724-8

Assessment of skeletal muscle - 2

	Strengths	Weaknesses
DEXA	Sensitive, accurate Lean + Adipose tissues Commonly used in clinical settings Relatively cheap Relatively easy	No muscle quality parameter Space requirements Low-dose radiation Water vs bone-free lean tissue
BIA	Minimal maintenance Portable Relatively cheap Relatively easy	Variable body resistance No muscle quality parameter Lower accuracy No specific body district
pQCT	Lean + Adipose tissues Muscle quality Portable Relatively easy	Specific body district Lower accuracy Designed for bone tissue Low-dose radiation

Cesari M et al. *Open Geriatr Med J* 2008;1:14-23
Pahor M et al. *J Nutr Health Aging* 2009;13:724-8

Assessment of skeletal muscle - 3

	Strengths	Weaknesses
Anthropometry	Easy Inexpensive	Very limited accuracy No muscle quality parameter
Ultrasound	Low cost Specific muscles	Trained personnel Difficult muscle quality estimate Specific body district Operator-dependent
Neutron activation	Direct measure of total body muscle mass	Expensive Limited validity Radiations Complex procedure No muscle quality parameter No information about specific body districts

Cesari M et al. *Open Geriatr Med J* 2008;1:14-23
Pahor M et al. *J Nutr Health Aging* 2009;13:724-8

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Epidemiology of Sarcopenia among the Elderly in New Mexico

Richard N. Baumgartner,[1] Kathleen M. Koehler,[1] Dympna Gallagher,[2] Linda Romero,[3] Steven B. Heymsfield,[2] Robert R. Ross,[5] Philip J. Garry,[4] and Robert D. Lindeman[5]

Muscle mass decreases with age, leading to "sarcopenia," or low relative muscle mass, in elderly people. Sarcopenia is believed to be associated with metabolic, physiologic, and functional impairments and disability. Methods of estimating the prevalence of sarcopenia and its associated risks in elderly populations are lacking. Data from a population-based survey of 883 elderly Hispanic and non-Hispanic white men and women living in New Mexico (the New Mexico Elder Health Survey, 1993–1995) were analyzed to develop a method for estimating the prevalence of sarcopenia. An anthropometric equation for predicting appendicular skeletal muscle mass was developed from a random subsample (n = 199) of participants and was extended to the total sample. Sarcopenia was defined as appendicular skeletal muscle mass (kg)/height^2 (m^2) being less than two standard deviations below the mean of a young reference group. Prevalences increased from 13–24% in persons under 70 years of age to >50% in persons over 80 years of age, and were slightly greater in Hispanics than in non-Hispanic whites. Sarcopenia was significantly associated with self-reported physical disability in both men and women, independent of ethnicity, age, morbidity, obesity, income, and health behaviors. This study provides some of the first estimates of the extent of the public health problem posed by sarcopenia. *Am J Epidemiol* 1998;147:755–63.

aged; aging; body composition; body mass index; frail elderly; muscles

Group	IANA Sarcopenia Task Force (8)	European Working Group on Sarcopenia in Older People (10)	Special Interest Group: Cachexia-anorexia in Chronic Wasting Diseases (11)	Sarcopenia with Limited Mobility (9)
Target population	Subjects with clinical declines in physical function, strength, or health status	All persons aged 65 years and older	Older persons	Persons older than 60 years with clinical declines in physical function, strength, or health status. Exclude specific muscle diseases, peripheral vascular disease with intermittent claudicatio, central and peripheral nervous system disorders, and cachexia
Screening	Physical function (4-meter gait speed). If gait speed <1.0 m/s, proceed to body composition evaluation	Gait speed. If gait speed ≤0.8 m/s, proceed to body composition evaluation. If gait speed >0.8 m/s, measure hand grip strength; if low muscle strength, proceed to body composition evaluation		Distance walked during a 6-minute walk test (cut-point: 400 meters), or gait speed <1.0 m/s (4 to 6 meter track length)
Operative definition	Poor functioning plus low ratio between appendicular lean mass (assessed by DXA) and squared height (≤7.23 kg/m^2 in men, ≤5.67 kg/m^2 in women)	Low muscle mass in patients with gait speed ≤0.8 m/s, or normal gait speed but low muscle strength	Low muscle mass (≥2 standard deviations below the mean measured in young adults of the same sex and ethnic background) plus low usual gait speed (<0.8 m/s in the 4-meter walking test). Gait speed test can be replaced by other physical performance measures.	Poor functioning plus low appendicular lean mass (≥2 standard deviations below the mean measured in healthy persons aged 20-30 years old from the same ethnic group)

Cesari M et al. *J Frailty Aging* 2012;1:102-10
Cesari M et al. *J Cachexia Sarcopenia Muscle* 2012;3:181-90

Journals of Gerontology: MEDICAL SCIENCES
Cite journal as: J Gerontol A Biol Sci Med Sci 2014 May;69(5):547–558
doi:10.1093/gerona/glu010

Special Article

The FNIH Sarcopenia Project: Rationale, Study Description, Conference Recommendations, and Final Estimates

Stephanie A. Studenski,[1] Katherine W. Peters,[2] Dawn E. Alley,[3] Peggy M. Cawthon,[2] Robert R. McLean,[4,5] Tamara B. Harris,[6] Luigi Ferrucci,[6] Jack M. Guralnik,[3] Maren S. Fragala,[7] Anne M. Kenny,[8] Douglas P. Kiel,[4,5] Stephen B. Kritchevsky,[9] Michelle D. Shardell,[3] Thuy-Tien L. Dam,[10] and Maria T. Vassileva[11]

Table 3. Recommendations for Cutpoints for Weakness and Low Lean Mass in Men and Women

Cutpoint	Men	Women
Weakness		
Recommended: grip strength (GSMAX)	<26 kg	<16 kg
Alternate: grip strength adjusted for BMI ($GSMAX_{BMI}$)	<1.0	<0.56
Appendicular lean body mass		
Recommended: ALM adjusted for BMI (ALM_{BMI})	<0.789	<0.512
Alternate: ALM	<19.75 kg	<15.02 kg

Notes: ALM = appendicular lean mass; BMI = body mass index.

- Epidémiologie du vieillissement
  - Les scénarios qui changent
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Research

Original Investigation

Effect of Structured Physical Activity on Prevention of Major Mobility Disability in Older Adults

The LIFE Study Randomized Clinical Trial

Marco Pahor, MD; Jack M. Guralnik, MD, PHD; Walter T. Ambrosius, PhD; Steven Blair, PED; Denise E. Bonds, MD; Timothy S. Church, MD, PhD, MPH; Mark A. Espeland, PhD; Roger A. Fielding, PhD; Thomas M. Gill, MD; Erik J. Groessl, PhD; Abby C. King, PhD; Stephen B. Kritchevsky, PhD; Todd M. Manini, PhD; Mary M. McDermott, MD; Michael E. Miller, PhD; Anne B. Newman, MD, MPH; W Jack Rejeski, PhD; Kaycee M. Sink, MD, MAS; Jeff D. Williamson, MD, MHS; for the LIFE study investigators

Pahor M et al. JAMA 2014;311(23):2387-96

JAMDA

journal homepage: www.jamda.com

Special Article

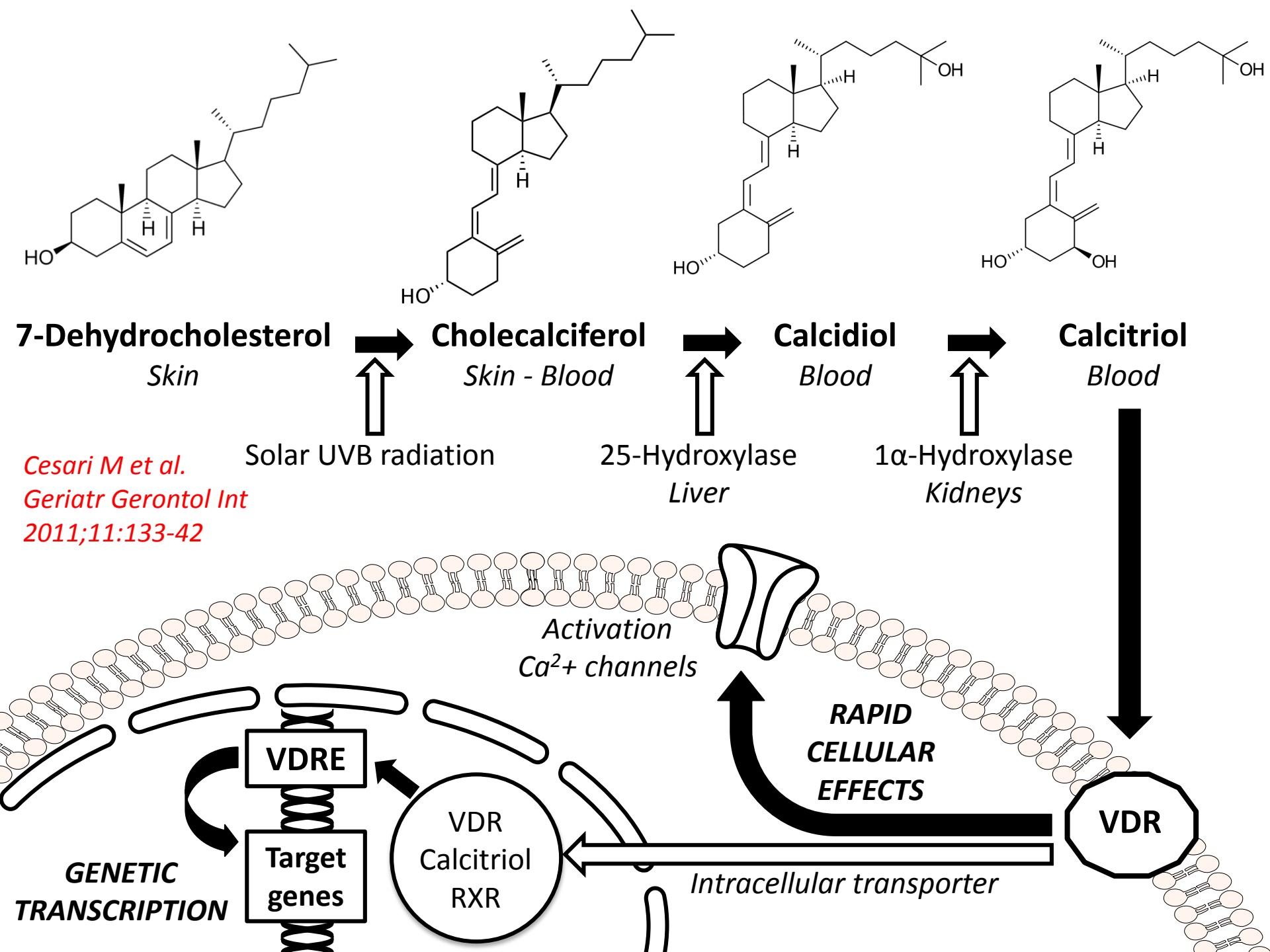
Evidence-based Recommendations for Optimal Dietary Protein Intake in Older People: A Position Paper From the PROT-AGE Study Group

Jürgen Bauer MD[a,*], Gianni Biolo MD, PhD[b], Tommy Cederholm MD, PhD[c], Matteo Cesari MD, PhD[d], Alfonso J. Cruz-Jentoft MD[e], John E. Morley MB, BCh[f], Stuart Phillips PhD[g], Cornel Sieber MD, PhD[h], Peter Stehle MD, PhD[i], Daniel Teta MD, PhD[j], Renuka Visvanathan MBBS, PhD[k], Elena Volpi MD, PhD[l], Yves Boirie MD, PhD[m]

Key PROT-AGE recommendations for dietary protein intake in older adults

- To maintain physical function, older people need more dietary protein than do younger people, i.e., an average daily intake at least in the range of 1.0 to 1.2 g/kg BW/day.
- Most older adults who have an acute or chronic disease need even more dietary protein, i.e., 1.2-1.5 g/kg BW/day; people with severe illness or injury or with marked malnutrition may need as much as 2.0 g/kg BW/day.
- Older people with severe kidney disease who are not on dialysis (i.e., estimated GFR < 30mL/min/1.73m^2) are an exception to the high-protein rule; these individuals need to limit protein intake.
- Protein quality, timing of intake, and amino acid supplementation may be considered in order to achieve the greatest benefits from protein intake, but further studies are needed to make explicit recommendations.
- In combination with increased protein intake, exercise is recommended at individualized levels that are safe and tolerated.

J Am Med Dir Assoc 2013;14:542-559


7-Dehydrocholesterol
Skin
Cholecalciferol
Skin - Blood
Calcidiol
Blood
Calcitriol
Blood
Solar UVB radiation
25-Hydroxylase
Liver
1α-Hydroxylase
Kidneys
Cesari M et al.
Geriatr Gerontol Int
2011;11:133-42
Activation
Ca2+ channels
RAPID
CELLULAR
EFFECTS
VDRE
Target
genes
GENETIC
TRANSCRIPTION
VDR
Calcitriol
RXR
VDR
Intracellular transporter

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Innovative Medicines Initiative

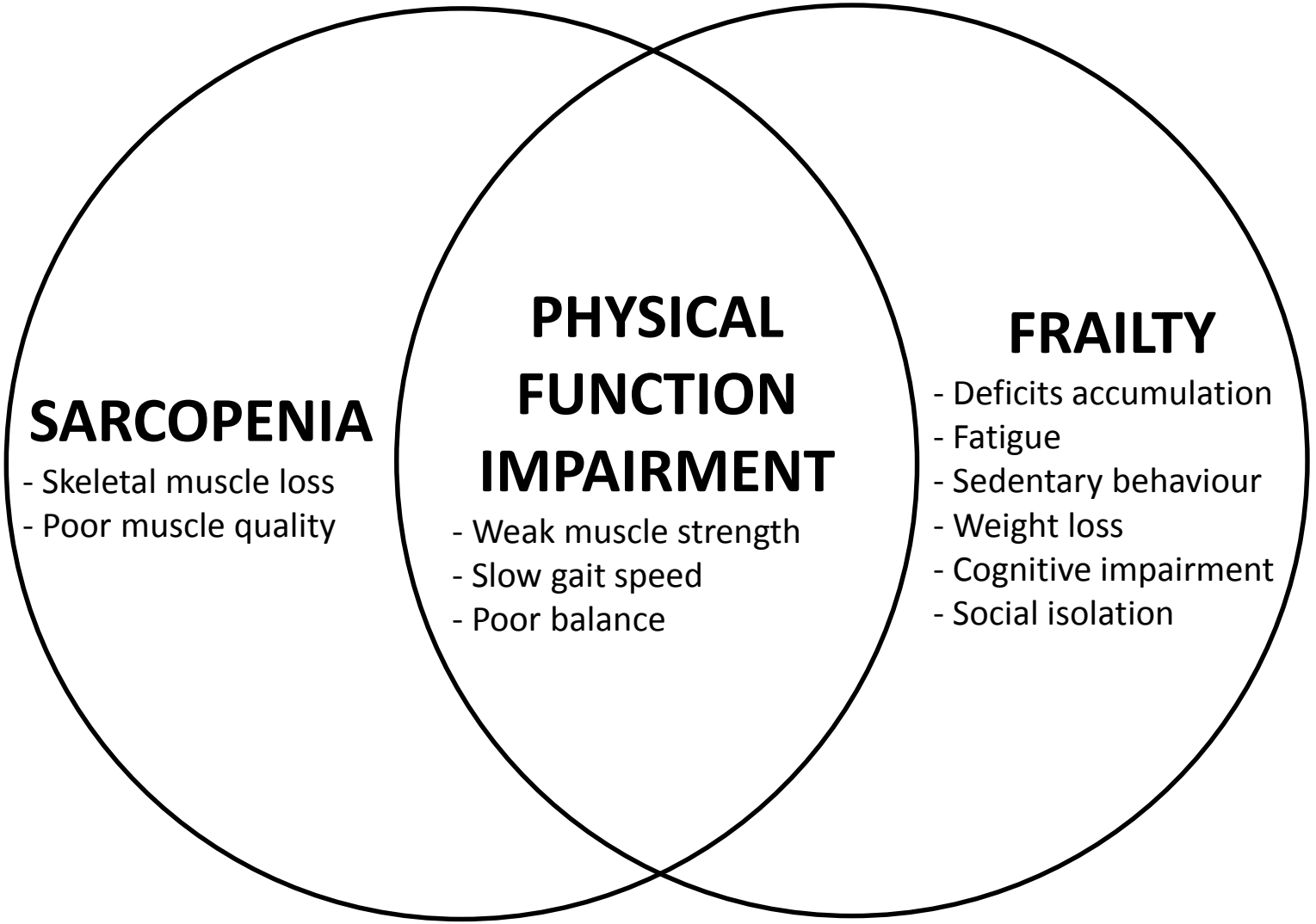
SPRINTT
Sarcopenia & Physical fRailty IN older people: multi-componenT Treatment strategies

efpia

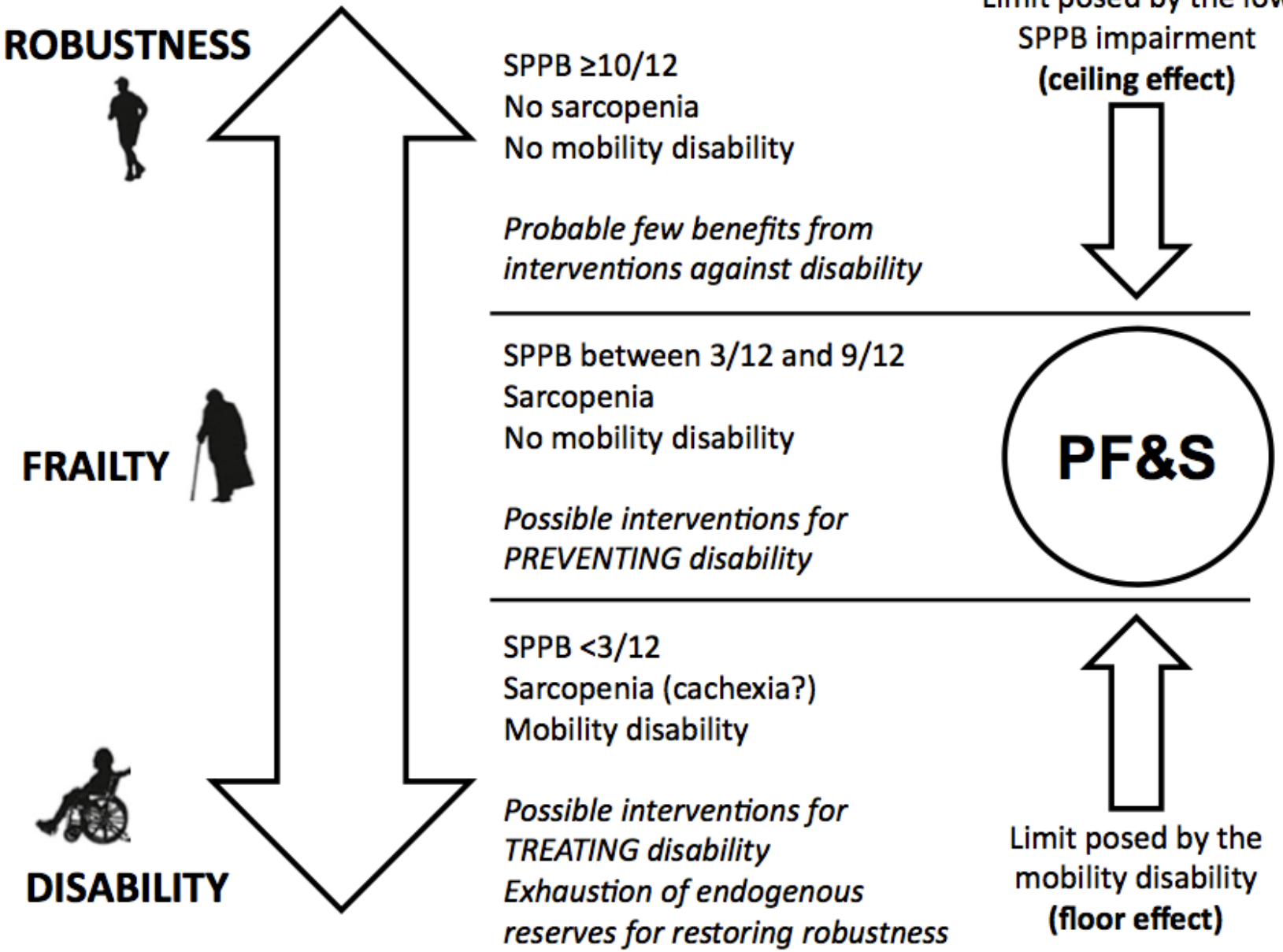
9th IMI Call: Developing innovative therapeutic interventions against physical frailty/sarcopenia

Sarcopenia and Physical fRailty IN older people: multi-componenT Treatment strategies (SPRINTT)

Overall budget: about 48 million euros (24 from European Commission, 24 [in-kind] from the European Federation of Pharmaceutical Industries and Associations [EFPIA])



Cesari M et al. *Front Aging Neurosci* 2014;6:192



Cesari M, et al. *Aging Clin Exp Res* 2017 ahead of print

EUROPEAN MEDICINES AGENCY

SCIENCE MEDICINES HEALTH

RCT Centers

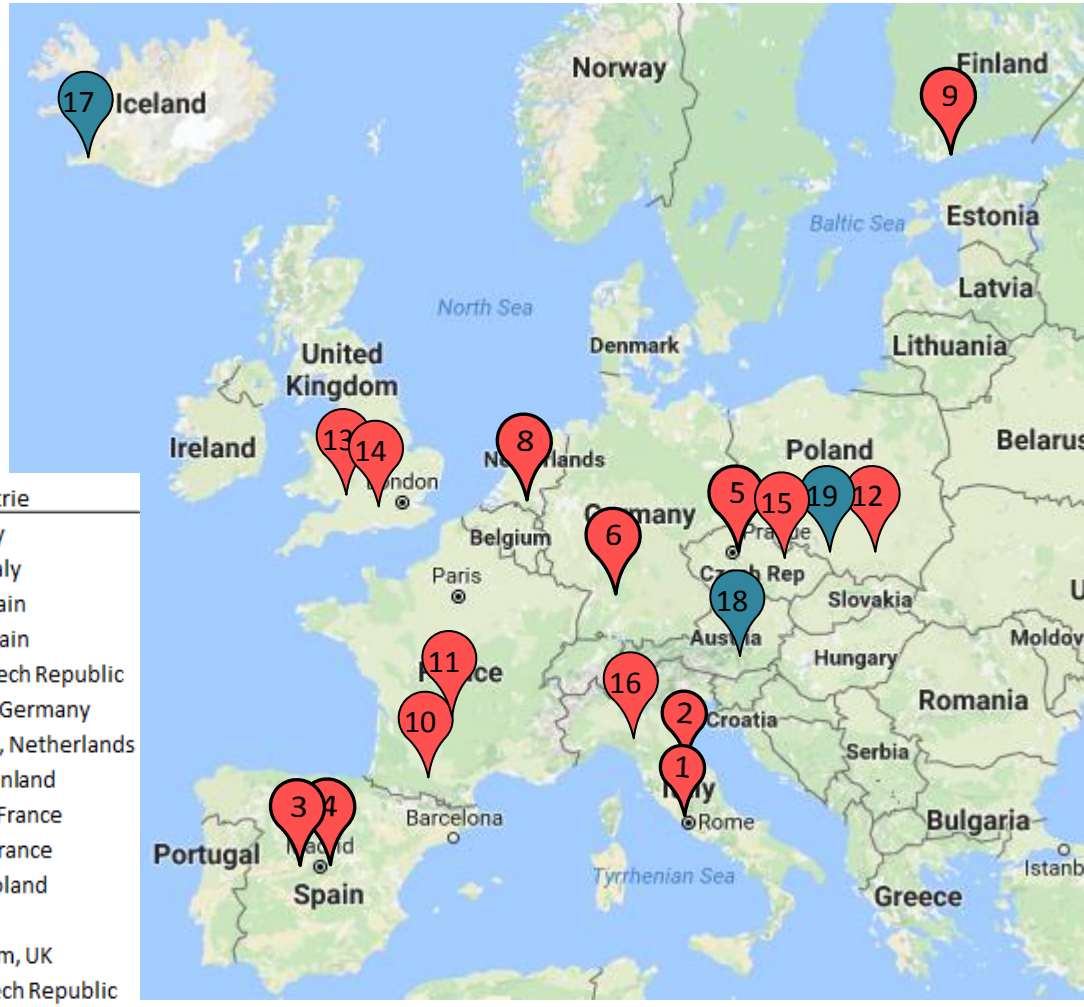
SPRINTT
Sarcopenia & Physical fRailty IN older people: multi-component Treatment strategies

15 sites open

9 European Countries

3 new sites to be opened

2 new European countries



Site Number	Site name	City, Countrie
1	Catholic University of the Sacred Heart	Rome, Italy
2	IRCCS-INRCA	Ancona, Italy
3	University Hosdpital of Getafe	Getafe, Spain
4	University Hospital Ramon y Cajal	Madrid, Spain
5	Charles University	Prague, Czech Republic
6	Friedrich Alexander Universität Erlangen Nürnberg	Nürnberg, Germany
8	University of Maastricht	Maastricht, Netherlands
9	University of Helsinki	Helsinki, Finland
10	CHU Toulouse	Toulouse, France
11	CHU Limoges	Limoges, France
12	Jagiellonian University Medical College	Krakow, Poland
13	Aston University	Aston, UK
14	University of Birmingham	Birmingham, UK
15	Silesians Hospital	Opava, Czech Republic
16	University of Parma	Parma, Italy
17	Lanspitali University Hospital	Reykjavik, Iceland
18	Medical University of Graz	Graz, Austria
19	JP II Geriatric Hospital of Katowice	Katowice, Poland

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Conclusions

Le concept de fragilité est à la base de la médecine gériatrique et pourrait représenter l'état sur lequel remodeler nos obsolètes systèmes de soins de santé

La fragilité et la sarcopénie sont des états cliniques associés à événements indésirables chez les personnes âgées

Bien que leurs bases théoriques soient bien établies, des limitations limitent encore leur implémentation clinique

Les mesures de performance physique peuvent détecter la vulnérabilité de l'individu et mesurer son âge biologique

L'évaluation du centre commun partagé par la fragilité physique et la sarcopénie (c'est-à-dire le déclin musculaire) peut servir de base à la promotion de la prévention de la dépendance

Sprintt
CLINICAL TRIAL

Merci!

Matteo Cesari (macesari@gmail.com)

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Hôpitaux de Toulouse