

CONGRÉS SOCIETAT CATALANA
**XXV GERIATRIA
GERONTOLOGIA** 7-8
NOVEMBRE
2019
AUDITORI
DE L'ACADEMIA



FRAGILITAT

-de què parlem?-

i CAPACITAT INTRÍNSECA

Jordi Amblàs Novellas, MD, PhD





Clegg A, et al. Frailty in elderly people. Lancet 2013

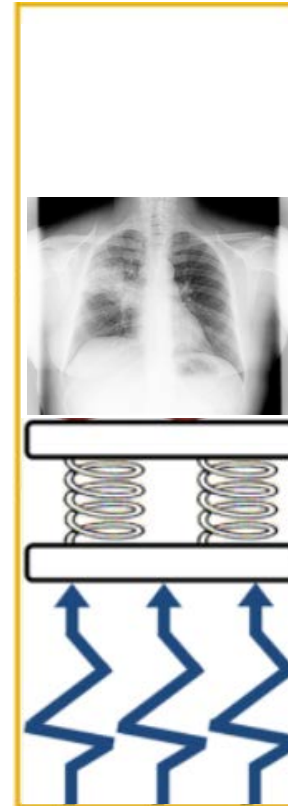
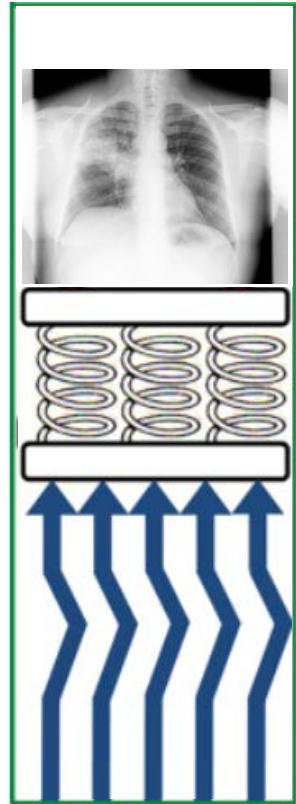
FRAGILITAT

INDEPENDÈNCIA

DEPENDÈNCIA



FRAGILITAT



Adaptat de Ethun C et al: **Frailty and cancer: Implications for oncology surgery, medical oncology, and radiation oncology.** CA. 2017.

FRAGILITAT

↪ 2 conceptualitzacions:



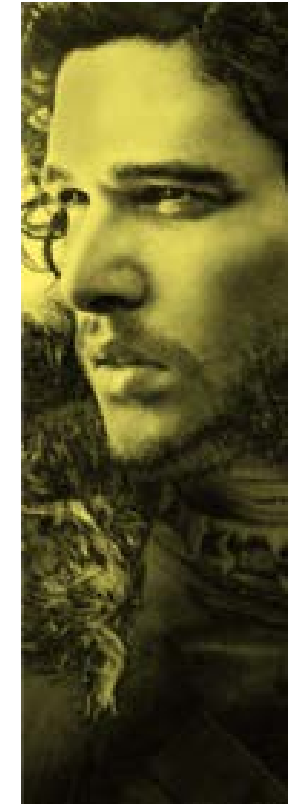
LINDA
FRIED



La fragilitat
com a
SÍNDROME



KENNETH
ROCKWOOD



La fragilitat
com a
**ACÚMUL
DE
DÈFICITS**

FRAGILITAT

La fragilitat
com a
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PRESENTACIÓ CLÍNICA

Pèrdua de

Sarcopèni

Pèrdua de

↓ Velocitat

↓ Activitat

DISREGULACIÓ FISIOLOGIA

Inflamació (IL-6, TNF α ,...)

Disregulació glicèmica

Alteracions hormonals

Alt. hematopoesi

Stress desadaptatiu

DISFUNCIÓ CEL·LULAR

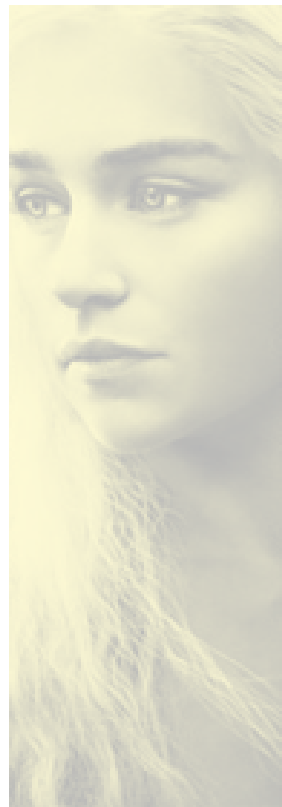
Disfunció telòmers

Disfunció mitocondrial

↑ Radicals lliures

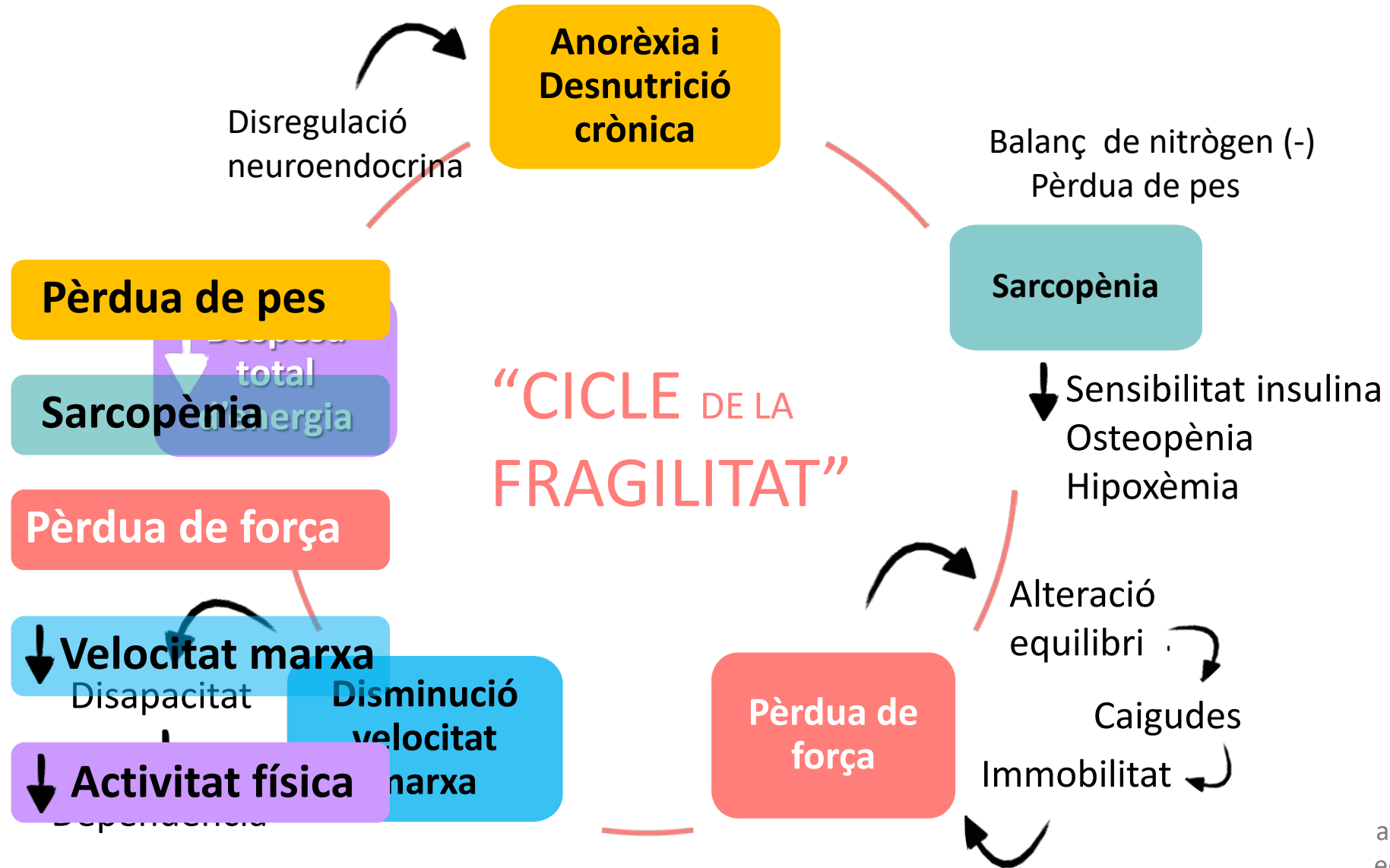
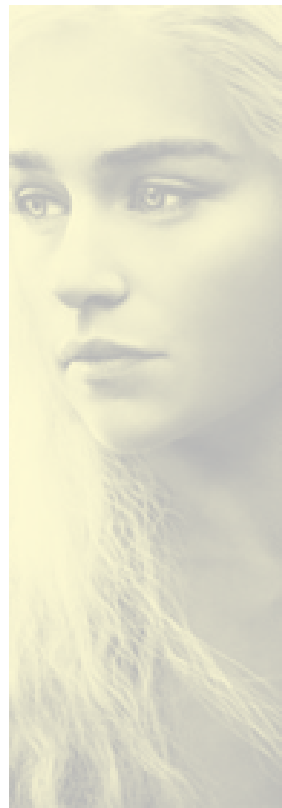
↓ Reparació DNA

Envelliment cel.lular



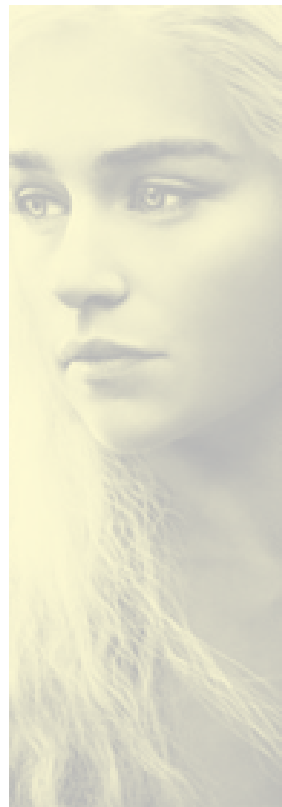
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DIAGNÒSTIC
SINDRÒMIC:

CRITERIS
DE FRIED

Despesa
total
d'energia

1 o 2: PREFRÀGIL

3 -5 : **FRÀGIL**

Fried LP, et al. Frailty in
older adults: evidence
for a phenotype.
J Gerontol A Biol Sci
Med Sci. 2001.

Disminució
velocitat
marxa

Anorèxia i
Desnutrició
crònica

Perda de pes *no intencionada (>5% pes)*

➤ **Debilitat** *(força prensora)*

Sarcopènia

➤ **Cansament** *o baixa resistència (autorreferit)*

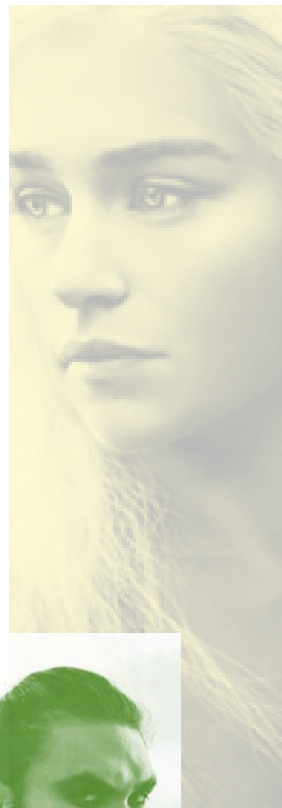
➤ **Lentitud** *(velocitat de la marxa)*

Pèrdua de
força

➤ **Baix grau d'activitat física** *(consum de Kcal/set)*

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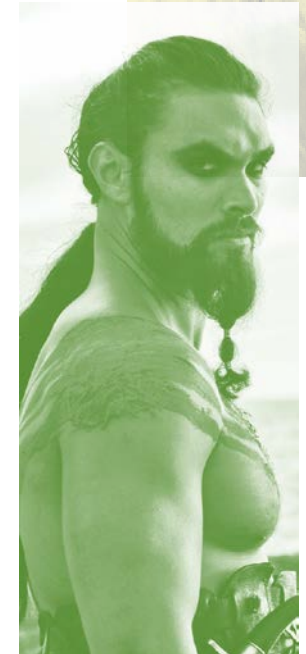


GUIDELINES

Age and Ageing 2019; **48**: 16–31
doi: 10.1093/ageing/afy169

Sarcopenia: revised European consensus on definition and diagnosis

ALFONSO J. CRUZ-JENTOFT¹, GÜLISTAN BAHAT², JÜRGEN BAUER³, YVES BOIRIE⁴, OLIVIER BRUYÈRE⁵, TOMMY CEDERHOLM⁶, CYRUS COOPER⁷, FRANCESCO LANDI⁸, YVES ROLLAND⁹, AVAN AIHIE SAYER¹⁰, STÉPHANE M. SCHNEIDER¹¹, CORNEL C. SIEBER¹², EVA TOPINKOVA¹³, MAURITS VANDEWOUDE¹⁴, MARJOLEIN VISSER¹⁵, MAURO ZAMBONI¹⁶, WRITING GROUP FOR THE EUROPEAN WORKING GROUP ON SARCOPENIA IN OLDER PEOPLE 2 (EWGSOP2), AND THE EXTENDED GROUP FOR EWGSOP2

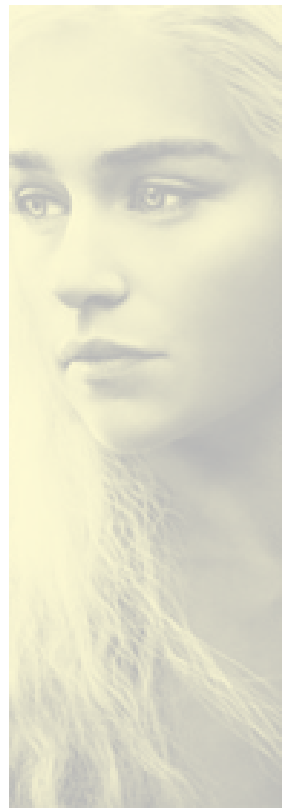


FRAGILITAT

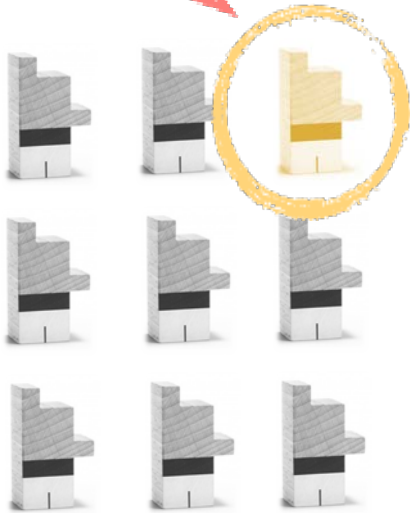
↪ **A la pràctica:**

CRIBRATGE POBLACIONAL
de persones a risc de discapacitat

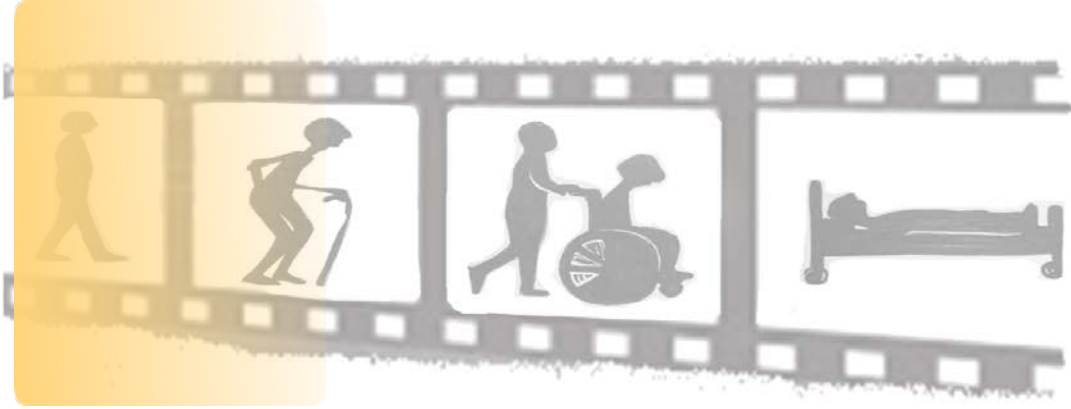
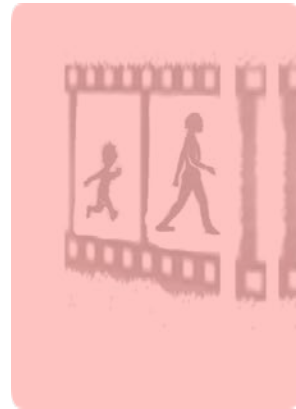
La fragilitat
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SÍNDROME



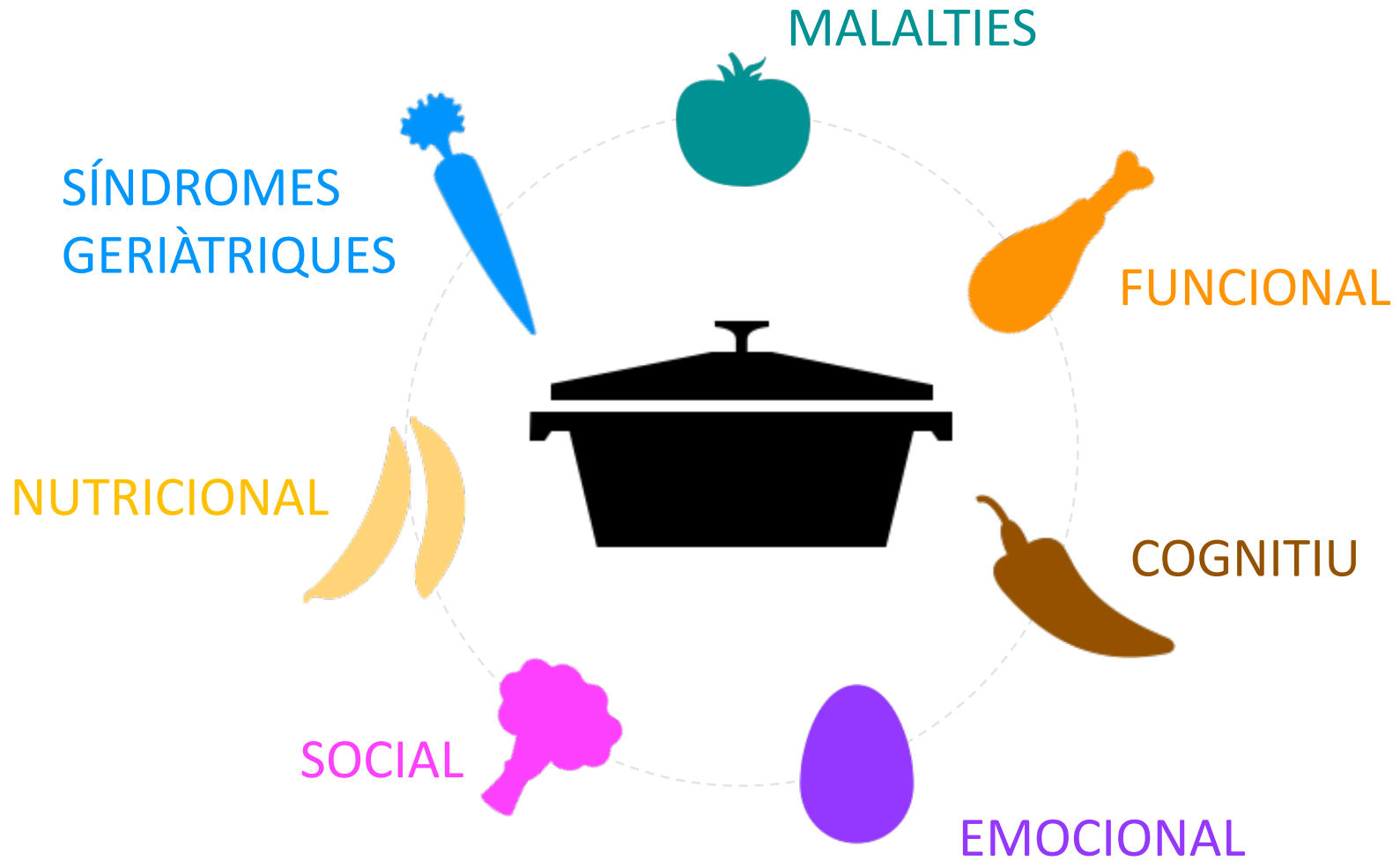
QUINES
persones tenen
risc de
discapacitat?



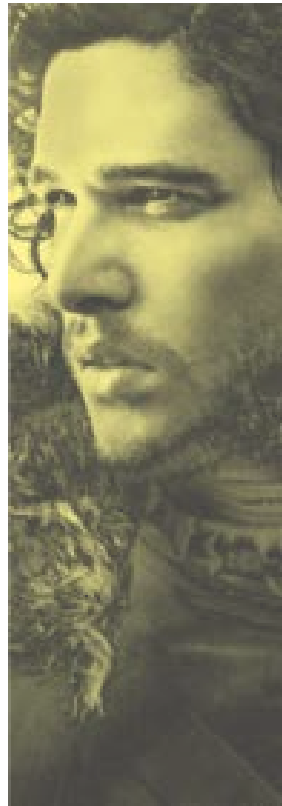
- ✓ Criteris de **Fried**
- ✓ **Test funcionals** (*Timed, up & go, velocitat marxa, SPPB, ...*)
- ✓ **Tests específics** (*GERONTOPOÛLE, PRISMA-7, FRAIL,...*)



FRAGILITAT



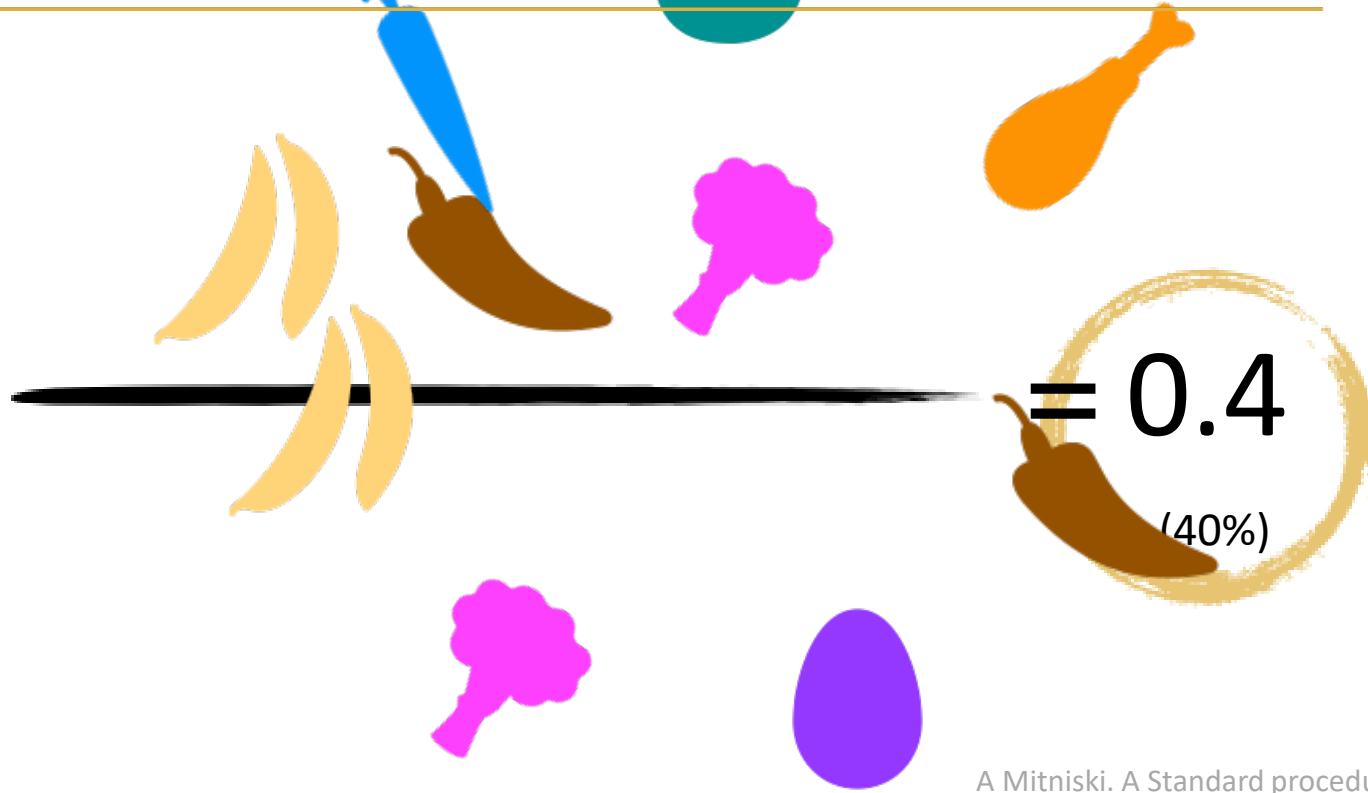
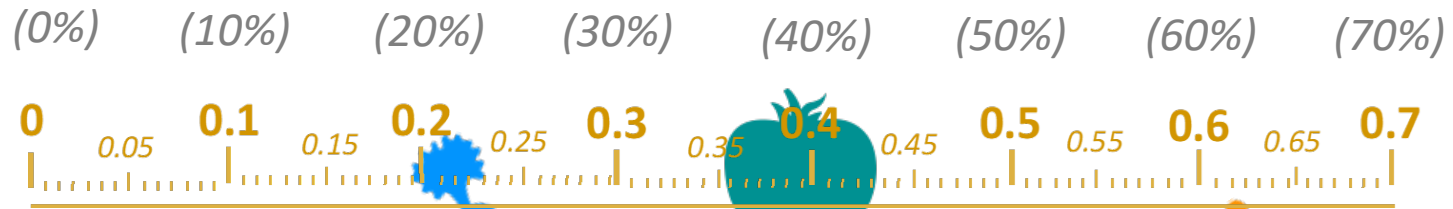
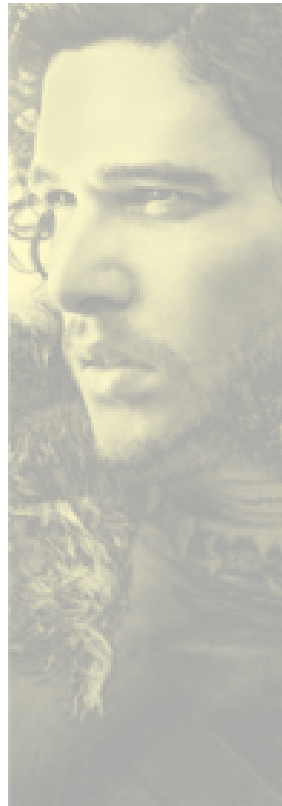
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DÈFICITS**



Kenneth Rockwood, et al.
A global clinical measure
of fitness and frailty in
elderly people. CMAJ.
2005

FRAGILITAT

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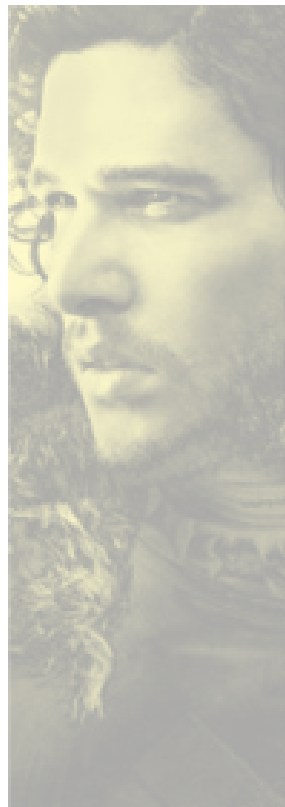


A Mitniski. A Standard procedure
for creating a frailty index. BMC
Geriatrics (2008)

**ÍNDEX DE
FRAGILITAT**

FRAGILITAT

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DE
DÈFICITS**



Research Article
TheScientificWorld (2001) 1, 323–336
ISSN 1532-2246; DOI 10.1100/tsw.2001.58

TheScientificWorld
www.thescientificworld.com

Ac
Me

CMAJ 2005;173(5):489-95

Research

Recherche

Amo
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Age and Ageing 2016; 0: 1–8
doi: 10.1093/ageing/afw039

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commercial re-use, distribution, and reproduction in any medium, provided the original work is

Kennet
Ian Mc

Develo
frailty
electro

ANDREW CLE
MOHAMMED A

Ambiàs-Novellas et al. *BMC Geriatrics* (2018) 18:29
DOI 10.1186/s12877-018-0718-2

BMC Geriatrics

RESEARCH ARTICLE

Open Access



Frail-VIG index: a concise frailty evaluation tool for rapid geriatric assessment

Jordi Ambiàs-Novellas^{1,2,3*}, Joan Carles Martori⁴, Joan Espauella^{1,2}, Ramon Oller⁴, Núria Molist-Brunet¹,
Marco Inzitari⁵ and Roman Romero-Ortuno^{6,7}

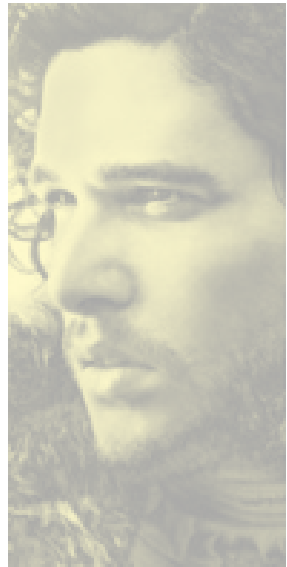
FRAGILITAT

↪ A la pràctica:

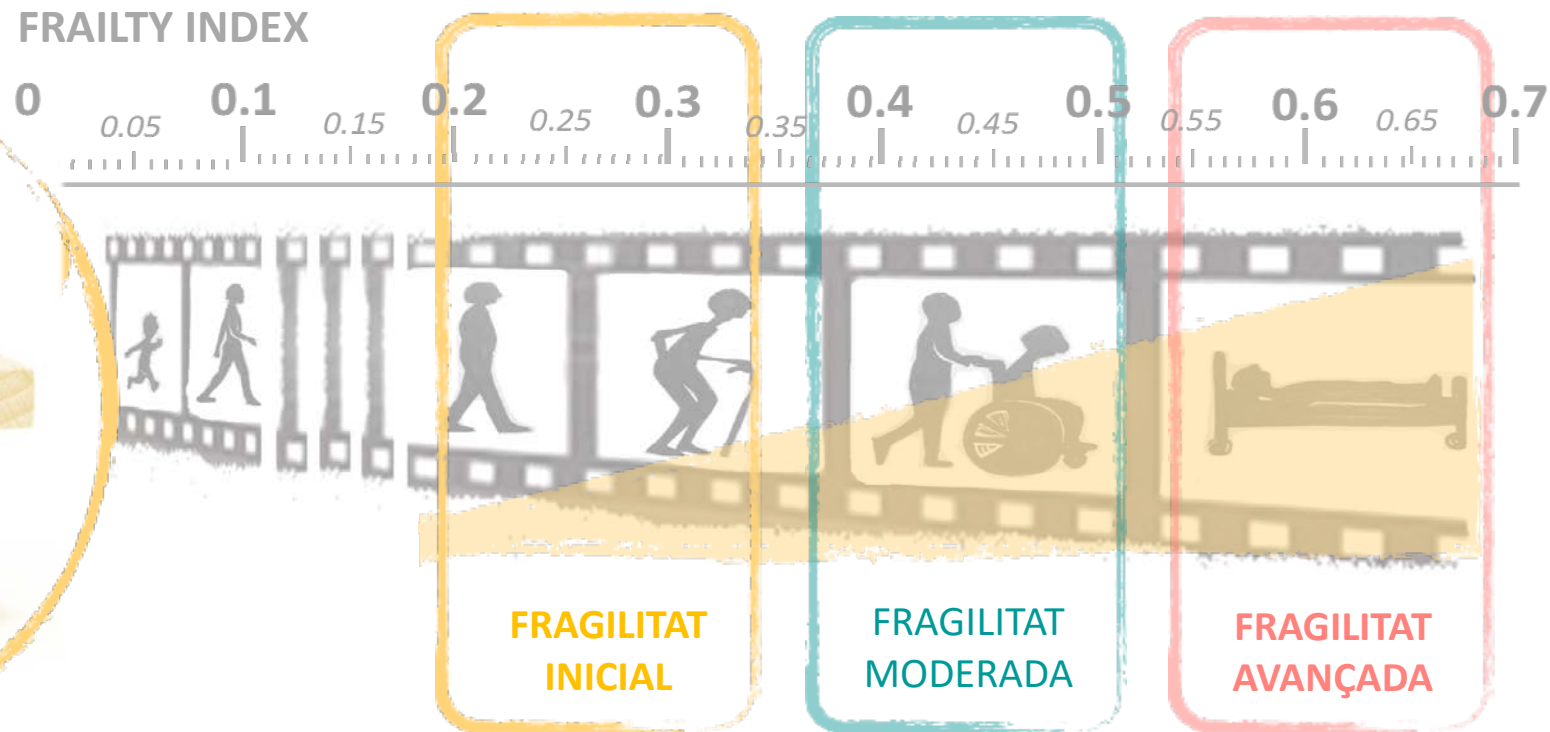
DIAGNÒSTIC SITUACIONAL

per a la presa de decisions

La fragilitat
com a
ACÚMUL
DE
DÈFICITS



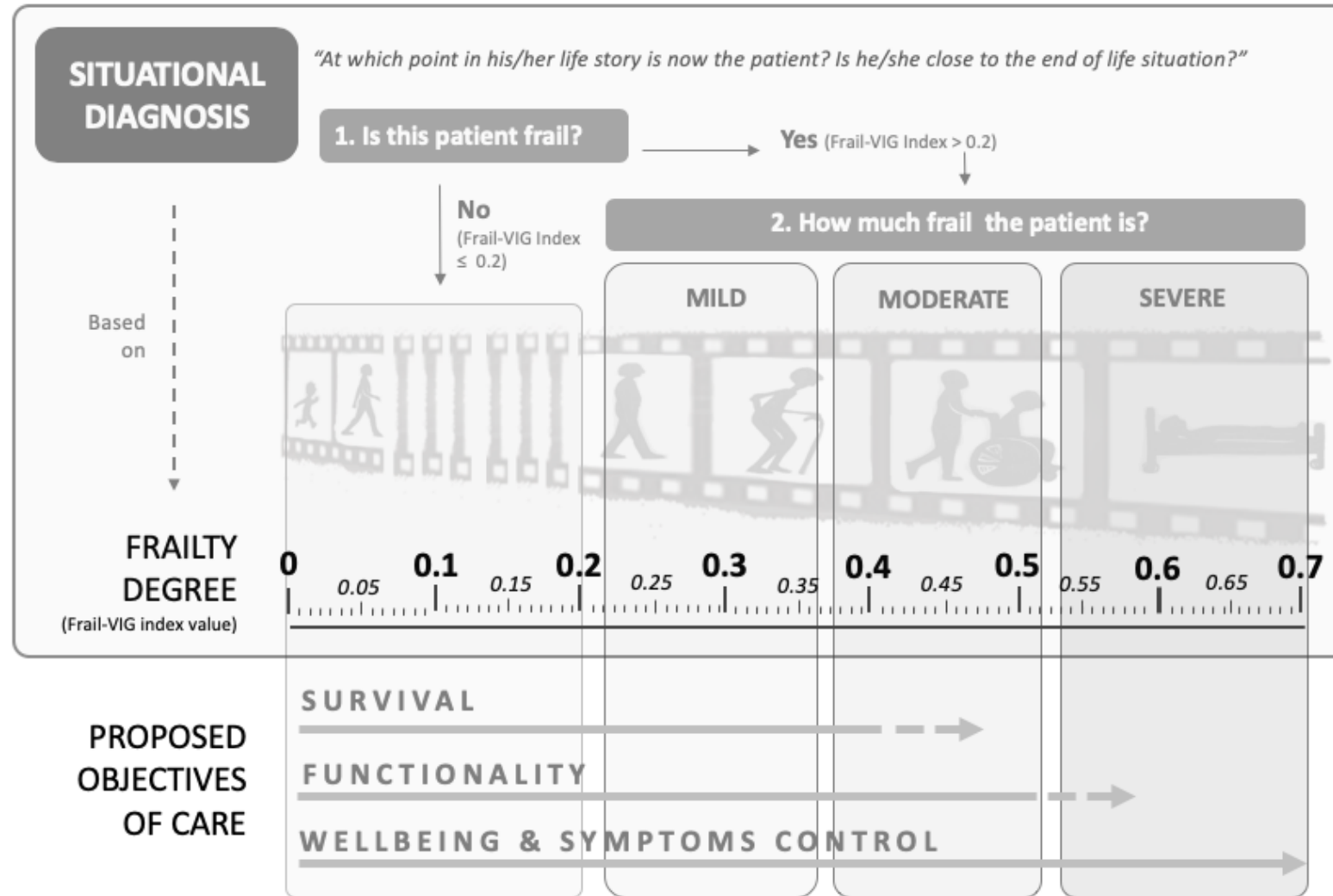
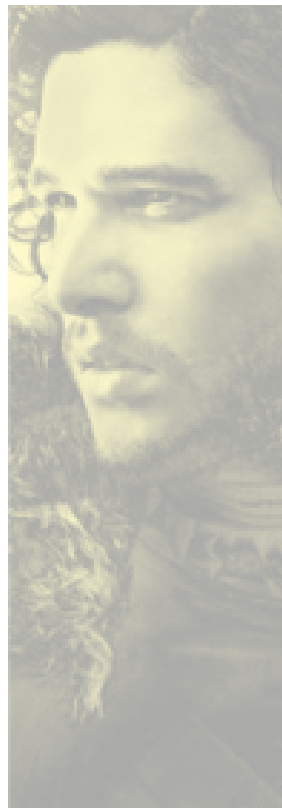
QUANT
de fràgil és?



Ambiàs-Novellas, J. et al. Frailty, severity, progression and shared decision-making: A pragmatic framework for the challenge of clinical complexity at the end of life. Eur Geriatr Med (2015)

FRAGILITAT

La fragilitat
com a **ACÚMUL**
DE DÈFICITS



Ambiàs-Novellas J,
et al. **Frail-VIG**
index: a concise
frailty evaluation
tool for rapid
geriatric
assessment. BMC
Geriatr. 2018

FRAGILITAT

2 conceptualitzacions COMPLEMENTÀRIES



VISIÓ SINDRÒMICA (fenotip de fragilitat/Criteris de Fried)	ACUMULACIÓ DE DÈFICITS (Índexs de fragilitat)
Signes, símptomes	Malalties, activitats de la vida diària, resultats de l'avaluació clínica
Detecció factible abans de la valoració clínica	Valorable només deprés d'una avaluació clínica
Variable categòrica	Variable contínua
Criteris pre-definits	Criteris no especificats
Fragilitat com a síndrome de pre-discapacitat	Fragilitat com a acumulació de dèficits
Pensat per a persones grans no discapacitades	Pensat per qualsevol individu independentment de la seva situació funcional i/o edat

Age a
doi: I
Publis

co

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di

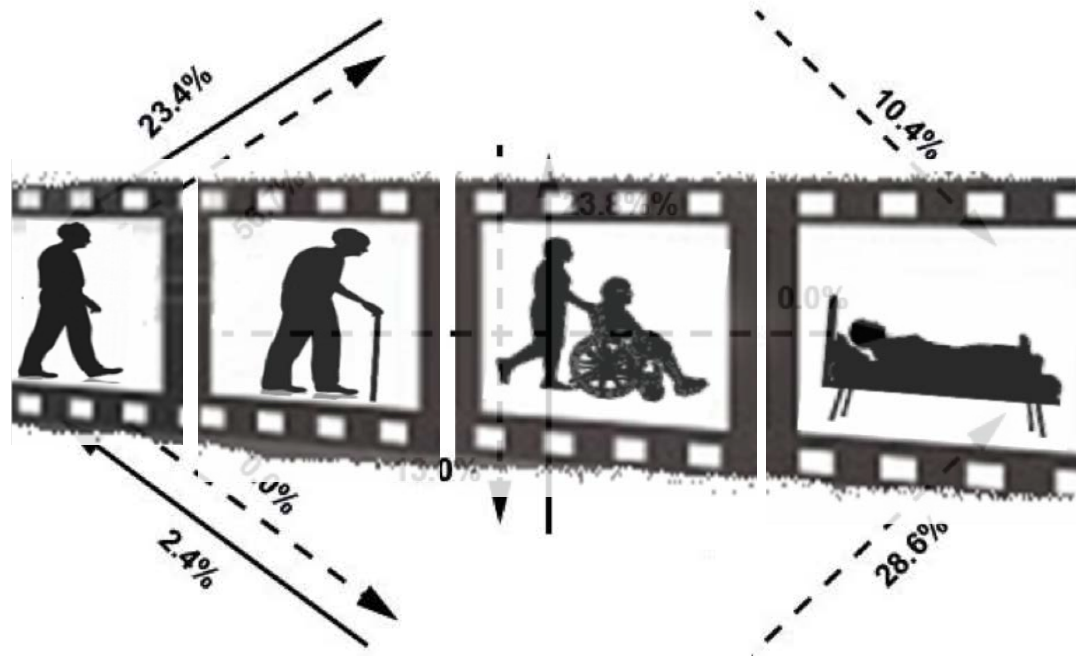
MAT

ciety.
.com

FRAGILITAT

→ VISIÓ DINÀMICA:

Baseline – 12 months



--▶ Worsening condition
—▶ Improving condition



Marchiori GF, Tavares DM. Changes in frailty conditions and phenotype components in elderly after hospitalization. Rev Lat Am Enfermagem. 2017 .

Gill T et al. Transitions between Frailty states among community-living Older persons. Arch Intern Med. (2006)

FRAGILITAT

→ VISIÓ DINÀMICA: Resiliència



Journal of the American Geriatrics Society | No Stressors | No Stressors | No Stressors

AGS Geriatrics Healthcare Professionals
Leading Change. Improving Care for Older Adults.

Editorial | [Free Access](#) | Adaptive Capacity

Can a Link Be Found Between Physical Resilience and Frailty in Older Adults by Studying Dynamical Systems?

Ravi Varadhan PhD, Jeremy D. Walston MD, Karen Bandeen-Roche PhD ✉






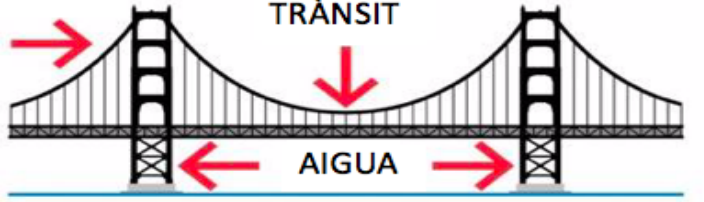
First published: 04 May 2018 | <https://doi.org/10.1111/jgs.15409> | Cited by: 3

Resiliency | Resiliency | Resiliency

A diagram illustrating dynamical systems. It features three vertical columns, each representing a system. At the top of each column is a box labeled "Adaptive Capacity". Below each box is a spring-like structure with a vertical arrow pointing upwards, indicating a dynamic system. At the bottom of each column is a box labeled "Resiliency". The columns are color-coded: green, yellow, and red. A large blue rounded rectangle encloses the bottom "Resiliency" boxes and the text "First published: 04 May 2018 | https://doi.org/10.1111/jgs.15409 | Cited by: 3".

FRAGILITAT

→ VISIÓ DINÀMICA: Resiliència

CONSTRUCTES DE FRAGILITAT	FRAGILITAT I RESILIÈNCIA des de la perspectiva d'una estructura complexa (Golden Gate Bridge)
 <p data-bbox="723 568 952 694">APROXIMACIÓ FENOTÍPICA (Fried)</p>	
 <p data-bbox="723 862 952 988">ACUMULACIÓ DE DÈFICITS (Rockwood)</p>	
 <p data-bbox="723 1125 952 1302">RESILIÈNCIA (medició de l'homeosasi davant a un estressor)</p>	<p data-bbox="1003 1090 1090 1119">VENT</p>  <p data-bbox="1284 1125 1411 1153">TRÀNSIT</p> <p data-bbox="1284 1276 1411 1305">AIGUA</p>



Kuchel GA. Frailty and Resilience as Outcome Measures in Clinical Trials and Geriatric Care: Are We Getting Any Closer? J Am Geriatr Soc. 2018 Aug;66(8):1451-1454.

FRAGILITAT

THE
LANCET

www.thelancet.com Vol 394 October 12, 2019



Bringing frailty into all realms of medicine



See Series pages 1365 and 1376

For more on frailty in younger people see Articles Lancet Public Health 2018; 3: 323-32
For more on frailty and Alzheimer's disease expression see Articles Lancet Neurol 2019; 18: 177-84

Although the concept of frailty has been recognised for centuries, it wasn't until 2001 that a landmark attempt was made to standardise the definition of frailty, via a description of the condition's core clinical presentations. Characterised by a reduction in functioning across multiple physiological systems, which heightens an individual's vulnerability to stressors, the prevalence of frailty has increased in recent years largely because of population ageing. To recognise this growing burden, this week, *The Lancet* publishes a two-paper Series focusing on the identification, management, and prevention of frailty.

Frailty places a burden not only on affected individuals, their families, and caregivers but also on health and social care systems. Frailty is not an inevitable consequence of ageing and, even at advanced ages, many people do not become frail. Conversely, frailty is not limited to older people: frailty and prefrailty can exist in individuals younger than 65 years, particularly among those with multimorbidity. Frailty is a dynamic condition and individuals can transition in and out of frailty states. Prevention is possible, especially during the early

stages and prompt identification is crucial to maximise opportunities for intervention.

Frailty increases the risk of adverse outcomes in patients undergoing medical or surgical treatment. Consideration of frailty status should be integral when assessing patients to support decision making. Frailty might also amplify the effect of traditional risk factors on outcomes. For example, frail patients with Alzheimer's dementia have lower levels of Alzheimer's pathology than do non-frail patients, suggesting that frailty might reduce the threshold needed for Alzheimer's pathology to cause clinical symptoms.

In the past two decades, great strides have been made in our understanding of frailty. However, as a comparatively new research discipline, many gaps in knowledge remain: no universal consensus exists on the definition of frailty or its assessment, and more robust, high-quality trials of strategies to prevent and manage frailty are needed. What is clear, however, is that frailty is not solely the realm of geriatricians, and care plans for management of individuals with frailty should involve professionals from a range of relevant medical specialties. ■ *The Lancet*

Frailty 1

Frailty: implications for clinical practice and public health

Emiel O Hoogendijk, Jonathan Afilalo, Kristine E Ensrud, Paul Kowal, Graziano Onder, Linda P Fried

Frailty is an emerging global health burden, with major implications for clinical practice and public health. The prevalence of frailty is expected to rise alongside rapid growth in the ageing population. The course of frailty is characterised by a decline in functioning across multiple physiological systems, accompanied by an increased vulnerability to stressors. Having frailty places a person at increased risk of adverse outcomes, including falls, hospitalisation, and mortality. Studies have shown a clear pattern of increased health-care costs and use associated with frailty. All older adults are at risk of developing frailty, although risk levels are substantially higher among those with comorbidities, low socioeconomic position, poor diet, and sedentary lifestyles. Lifestyle and clinical risk factors are potentially modifiable by specific interventions and preventive actions. The concept of frailty is increasingly being used in primary, acute, and specialist care. However, despite efforts over the past three decades, agreement on a standard instrument to identify frailty has not yet been achieved. In this Series paper, we provide an overview of the global impact and burden of frailty, the usefulness of the frailty concept in clinical practice, potential targets for frailty prevention, and directions that need to be explored in the future.

Frailty 2

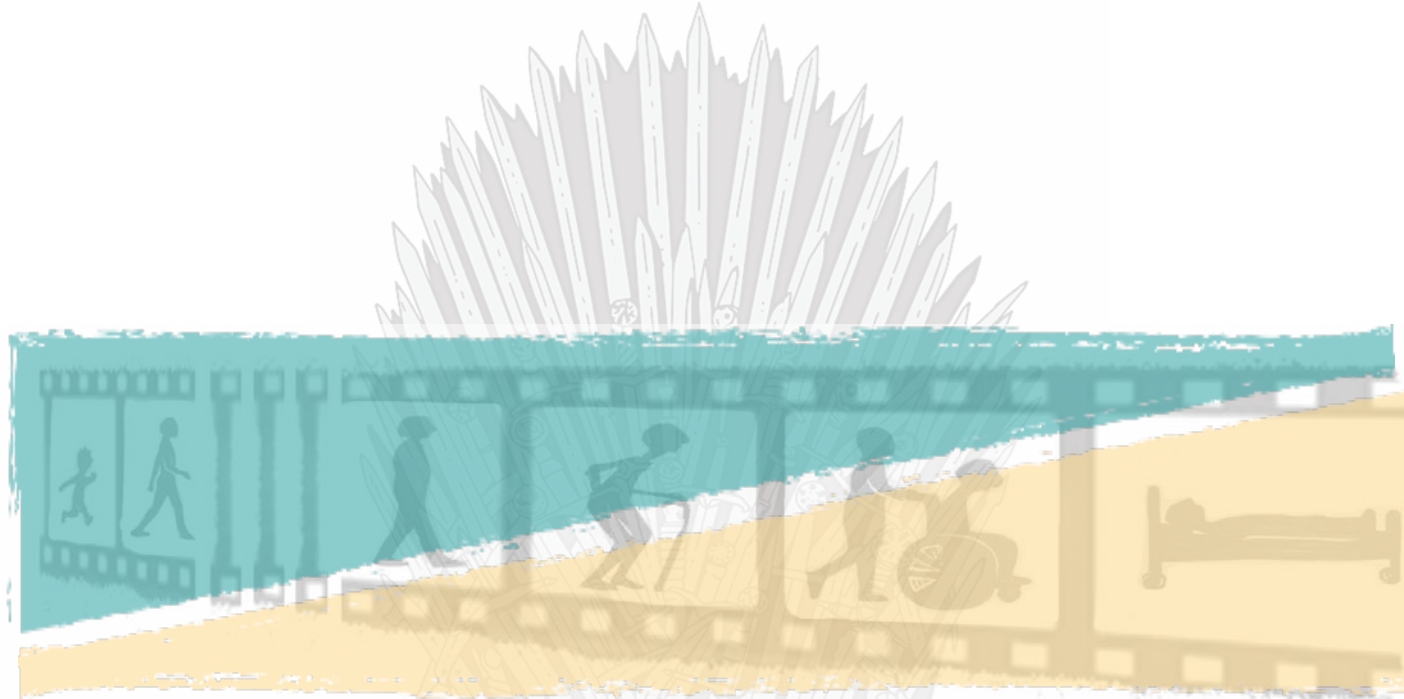
Management of frailty: opportunities, challenges, and future directions

Elsa Dent, Finbarr C Martin, Howard Bergman, Jean Woo, Roman Romero-Ortuno, Jeremy D Walston

Frailty is a complex age-related clinical condition characterised by a decline in physiological capacity across several organ systems, with a resultant increased susceptibility to stressors. Because of the heterogeneity of frailty in clinical presentation, it is important to have effective strategies for the delivery of care that range across the continuum of frailty severity. In clinical practice, we should do what works, starting with frailty screening, case identification, and management of frailty. This process is unarguably difficult given the absence of an adequate evidence base for individual and health-system interventions to manage frailty. We advocate change towards individually tailored interventions that preserve an individual's independence, physical function, and cognition. This change can be addressed by promoting the recognition of frailty, furthering advancements in evidence-based treatment options, and identifying cost-effective care delivery strategies.

FRAGILITAT i CAPACITAT INTRÍNSECA

↪ Dues cares de la mateixa moneda ↩



FRAGILITAT i CAPACITAT INTRÍNSECA

	Frailty	Intrinsic capacity (IC)
Definition	Progressive decline of physiological systems conferring increased vulnerability to stressors and exposing to the risk of adverse health outcomes	Composite of all mental and physical capacities
When	Geriatric condition	After the age corresponding to the median of the local life expectancy at birth
Time dimension	Cross-sectional assessment	Longitudinal assessment for tracking trajectories
Characteristics	Defined by deficits and abnormalities	Defined by reserves and residual capacities
Original purpose	Developed for addressing the unmet clinical needs of the older person	Developed to inform about public health strategies in the promotion of healthy ageing
Interventions	Comprehensive geriatric assessment, possibly within a network of integrated care	Comprehensive intervention based on integration of care and social services

Belloni G, Cesari M. **Frailty and Intrinsic Capacity: Two Distinct but Related Constructs.** Front Med (Lausanne). 2019.

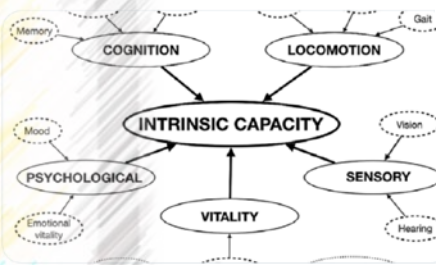


Jonathan Afilalo @Fraitl... · 4/4/19
Intrinsic capacity = 1/Frailty

Disagree or agree? Why? Looking to spark some debate...

pubmed.com/29408961

- @macesari @islene123
- @brunovellas @DrJohnBeard
- @drjohnmorley @MrDisability
- @DrGustavoDuque
- @JeremyWalstonMD @Krockdoc
- @GAWHeckman



4 replies, 24 retweets, 40 likes



Matteo Cesari @macesari

En resposta a @FrailtyMD @islene123 i a 8 més

Some time ago, I prepared this slide to compare Frailty, IC and resilience. I know it might oversimplify, but the complexity and long history of F Is not easy to summarize. I hope this may clarify and contribute in the discussion



Kenneth Rockwood @K... · 6/4/19
I don't disagree. Can say this though: in almost any clinical study that reports on the frailty phenotype, there are enough data to calculate a frailty index. We shouldn't be afraid to do both, nor then constrained to ignore degrees of frailty and only report a tripartite FI.

1 reply, 3 retweets, 14 likes



Matteo Cesari @maces... · 6/4/19
I would say even more... In EVERY clinical trial, there is sufficient information to retrospectively compute a #Frailty Index. This would allow to reconsider the previous results at the net of the participants' deficit accumulation (potentially leading to different findings)

2 replies, 4 retweets, 10 likes



Simon Mooijaart @DrSi... · 6/4/19
Intersting stuff! But unfortunately, even in #RCT's performed in #older people, #geriatric deficits are grossly underreported. How can we fix this? : [journals.plos.org/plosone/articl...](https://journals.plos.org/plosone/article...)

2 replies, 1 retweet, 2 likes



Jonathan Afilalo @Fraitl... · 6/4/19
Frailty = Sum of impairments

where impairments can be narrowly or broadly defined as long as they satisfy the two conditions of (1) being related to aging and (2) being associated with adverse health outcomes

1 reply, 1 retweet, 3 likes



Jonathan Afilalo @Fraitl... · 6/4/19
Frailty + Stress = 1/Resilience

where resilience is defined (by dictionary.com) as the "ability to recover to original form after being stressed" by an illness, injury, or iatrogenic stressor e.g. surgery

1 reply, 1 retweet, 1 like



Jordi Amblàs @jordiam... · 9/4/19
En resposta a @FrailtyMD @DrGustavoDuque i a 13 més

Then, from this approach: 1) we agreed that frailty is measurable / quantifiable (and therefore, It becomes a tangible & useful concept concept in clinical practice). But 2) Is the resilience measurable? (1/2)

1 reply, 1 retweet, 1 like



Jordi Amblàs @jordiam... · 9/4/19
Related to the formula number 2: the hypothetical quantification of the "stressor impact" would be useful to determine the degree of resilience? After all, most "stress test" works like that, isn't it? (2/2) @atorneco

1 reply, 1 retweet, 1 like, 1 message



Jonathan Afilalo @Fraitl... · 6/4/19
#Frailty twitterstorm helped me re-think and distill my own views into 1 slide



dr shibley rahman @dr_... · 7/4/19
En resposta a @FrailtyMD @jordiamblas i a 14 més

I don't agree with this slide. Frailty is a fundamentally construct of complexity. This slide makes a mockery of that. Fake news at its most glorious.

2 replies, 1 retweet, 1 like, 1 message



FRAILTY CONSTRUCTS

Sarcopenia Phenotype



-----few impairments considered-----

Intrinsic Capacity



Deficit Accumulation



-----many impairments considered----->

Frailty = \sum Impairments related to aging and associated with adverse health outcomes

Frailty + Stress = 1/Resilience

Frailty + Environment = Disability

Jonathan Afilalo 2019



Jordi Amblàs @jordiam... · 9/4/19 ✓
 Related to the formula number 2: the hypothetical quantification of the "stressor impact" would be useful to determine the degree of resilience? After all, most "stress test" works like that, isn't it? (2/2)
[@atorneco](#)



Jonathan Afilalo @Frailt... · 6/4/19 ✓
[#Frailty](#) twitterstorm helped me re-think and distill my own views into 1 slide

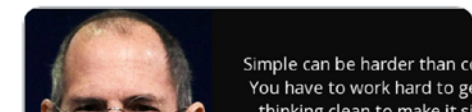


dr shibley rahman @dr_... · 7/4/19 ✓
 En resposta a [@FrailtyMD](#) [@jordiamblas](#) i a 14 més

I don't agree with this slide. Frailty is a fundamentally construct of complexity. This slide makes a mockery of that. Fake news at its most glorious.

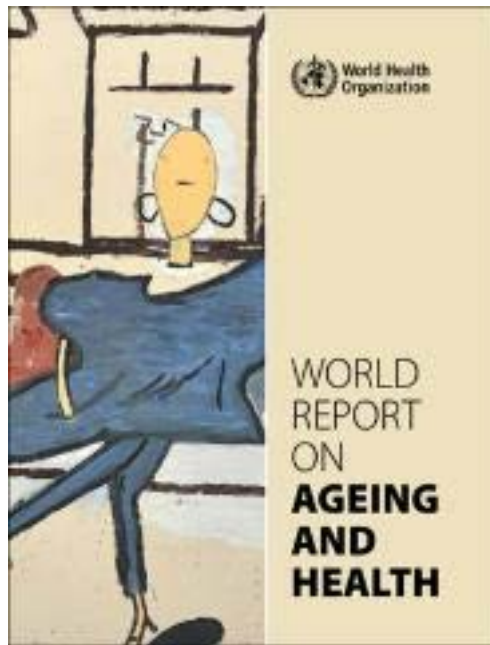


Jonathan Afilalo @Frailt... · 7/4/19 ✓



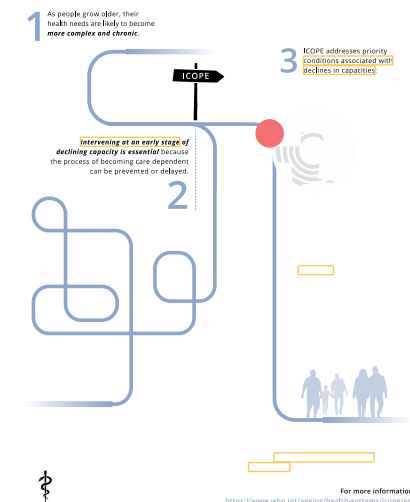
CAPACITAT INTRÍNSECA

2015

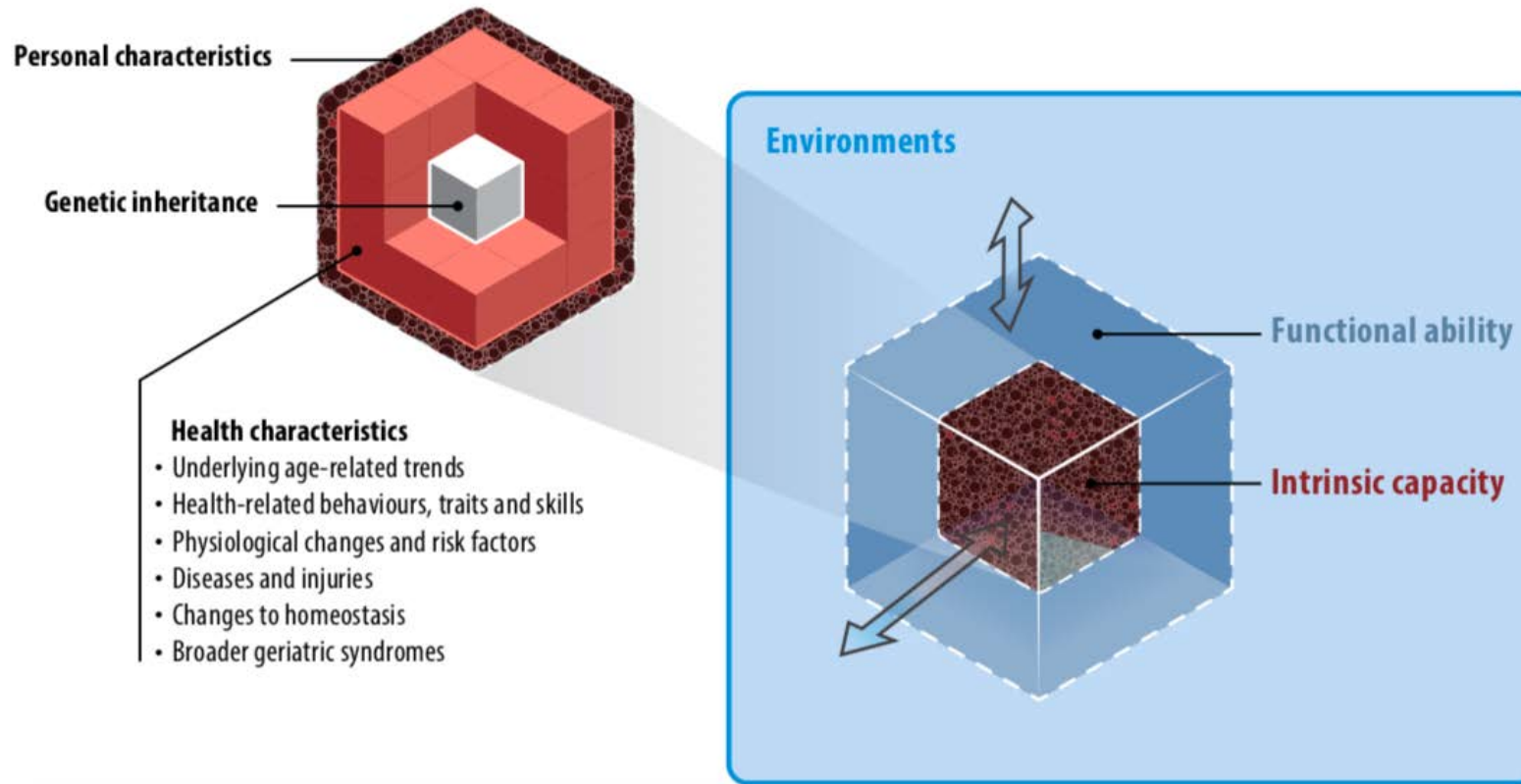


“Envelliment saludable:
CAPACITAT FUNCIONAL”

2017



CAPACITAT INTRÍNSECA



Vs **CAPACITAT FUNCIONAL**

Font: World report on ageing and health. 2015.

CAPACITAT INTRÍNSECA

Vs CAPACITAT FUNCIONAL

(3 períodes arquetípics)



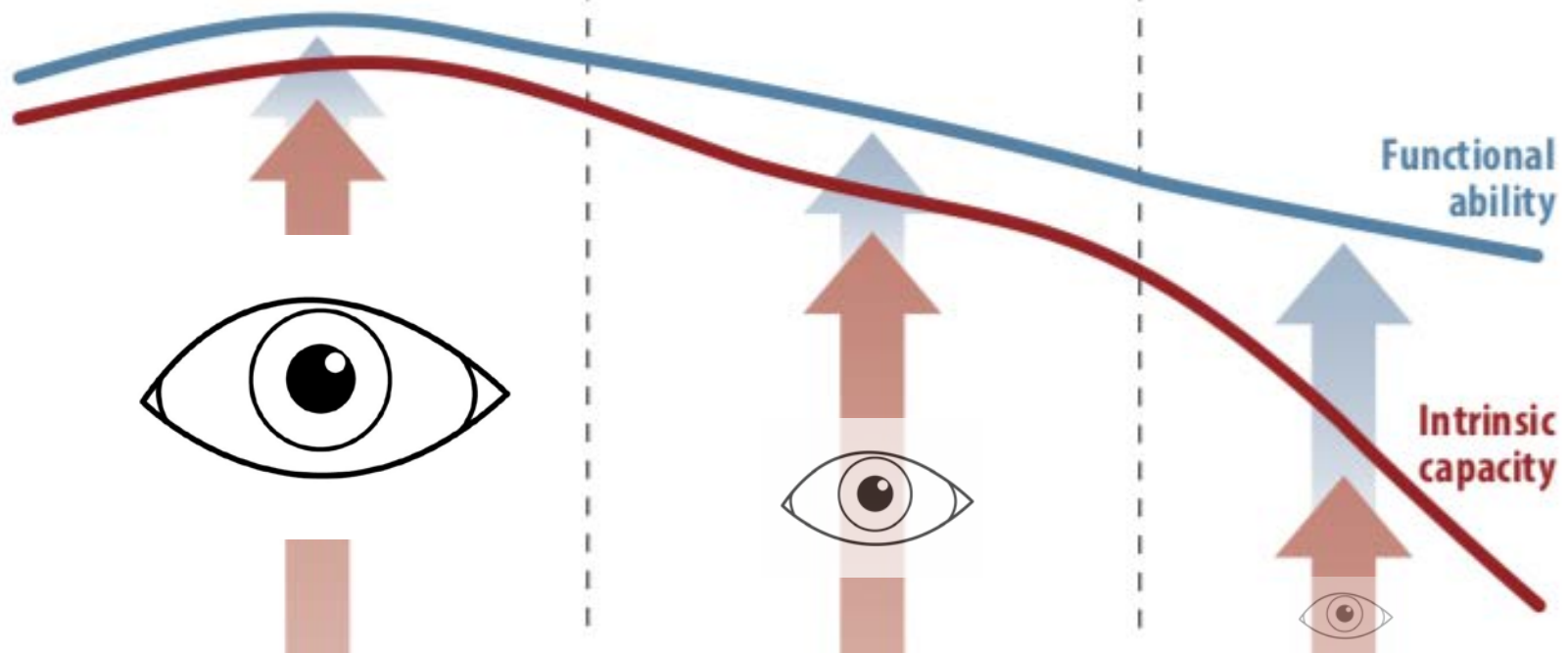
High and stable capacity



Declining capacity



Significant loss of capacity



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Vs CAPACITAT FUNCIONAL



Health services:

Prevent chronic conditions
or ensure early detection
and control

Reverse or slow
declines in capacity

Manage advanced
chronic conditions

Long-term care:

Support capacity-enhancing
behaviours

Ensure
a dignified late life

Environments:

Promote capacity-enhancing behaviours

Remove barriers to
participation, compensate for loss of capacity

Font: World
report on ageing
and health. 2015.

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DOMINIS CLAU:

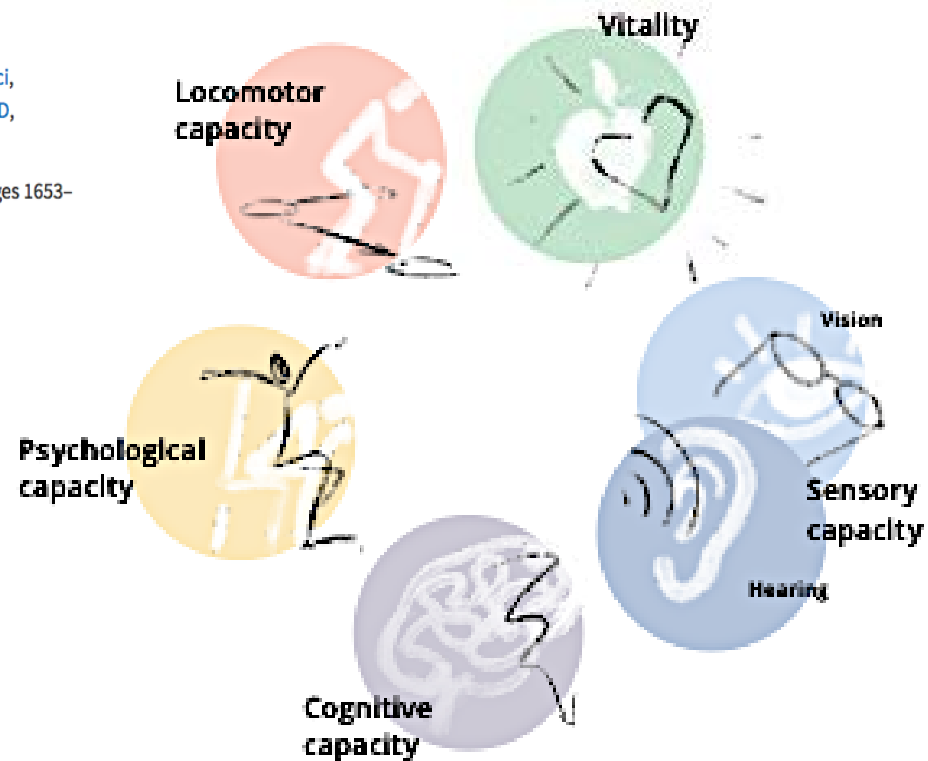


Volume 73, Issue 12
December 2018

Evidence for the Domains Supporting the Construct of Intrinsic Capacity

Matteo Cesari, MD, PhD ✉, Islene Araujo de Carvalho, MD, MPH,
Jotheeswaran Amuthavalli Thiyagarajan, MSc, PhD, Cyrus Cooper, MD, FMedSci,
Finbarr C Martin, MD, MSc, Jean-Yves Reginster, MD, PhD, Bruno Vellas, MD, PhD,
John R Beard, MBBS, PhD

The Journals of Gerontology: Series A, Volume 73, Issue 12, December 2018, Pages 1653–1660, <https://doi.org/10.1093/gerona/gly011>



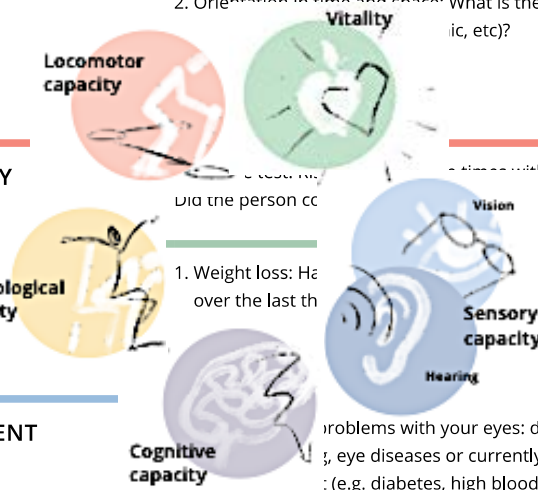
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VALORACIÓ:



WHO ICOPE SCREENING TOOL

Priority conditions associated with declines in intrinsic capacity	Tests	Assess fully if any answer in each domain triggers this
COGNITIVE DECLINE	1. Remember three words: flower, door, rice (for example) 2. Orientation in time and space: What is the full date today? (day, month, year, day of the week, etc)?	<input type="radio"/> Wrong to either question or does not know <input type="radio"/> Cannot recall all three words
LIMITED MOBILITY	1. Walks without using arms, or uses a walking stick, cane or other device to walk 2. Walks without using arms, or uses a walking stick, cane or other device to walk via the person's own feet, in 14 seconds?	<input type="radio"/> No
MALNUTRITION	1. Weight loss: Has lost more than 5% of body weight over the last 12 months 2. Appetite: Has lost more than 3 kg of weight over the last 6 months 3. Appetite: Has lost more than 3 kg of weight over the last 6 months	<input type="radio"/> Yes <input type="radio"/> Yes
VISUAL IMPAIRMENT	1. Has any of the following problems with your eyes: difficulties in seeing, eye diseases or currently under treatment (e.g. diabetes, high blood pressure)?	<input type="radio"/> Yes
HEARING LOSS	1. Hears whispers (whisper test) <i>or</i> 2. Screening audiometry result is 35 dB or less <i>or</i> 3. Passes automated app-based digits-in-noise test	<input type="radio"/> Fail
DEPRESSIVE SYMPTOMS	Over the past two weeks, have you been bothered by - feeling down, depressed or hopeless? - little interest or pleasure in doing things?	<input type="radio"/> Yes <input type="radio"/> Yes



Accessible a:
<https://www.who.int/ageing/publications/icope-handbook/en/>

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VALIDACIÓ del constructe:



BMJ Open: first published as 10.1136/bmjopen-2018-026119 on 2 November 2019.

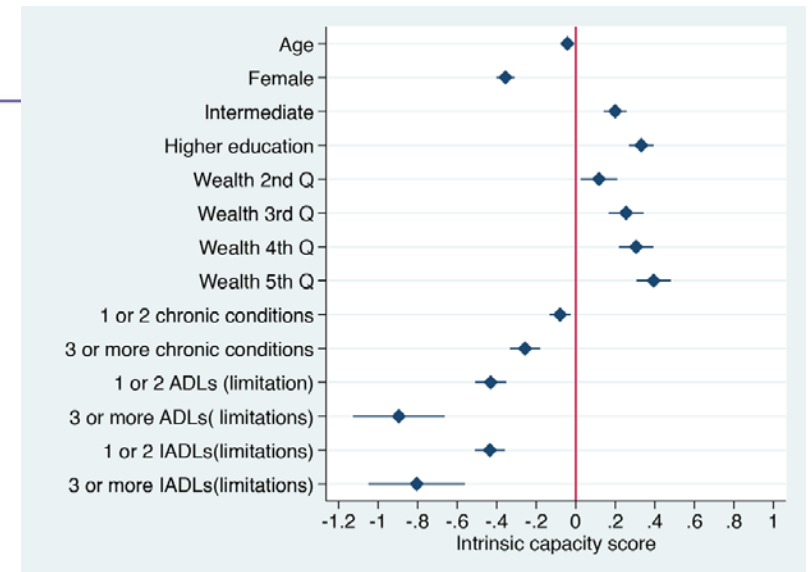
Open access

Research

BMJ Open The structure and predictive value of intrinsic capacity in a longitudinal study of ageing

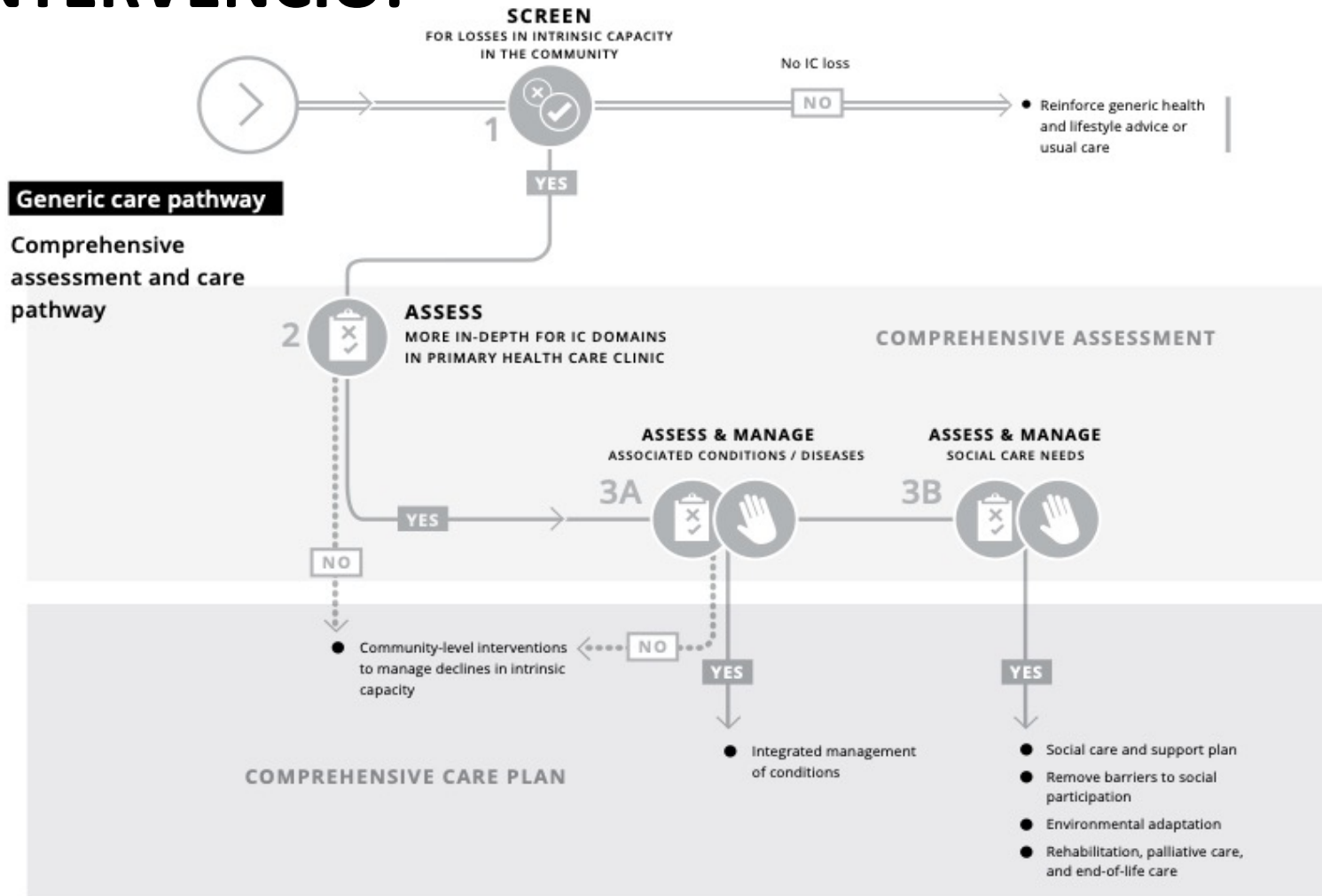
John R Beard ^{1,2} A T Jotheeswaran,¹ Matteo Cesari,³
Islene Araujo de Carvalho ¹

Conclusions The WHO construct of intrinsic capacity appears to provide valuable predictive information on an individual's subsequent functioning, even after accounting for the number of multimorbidities. The proposed general factor and subdomain structure may contribute to a transformative paradigm for future research and clinical practice.

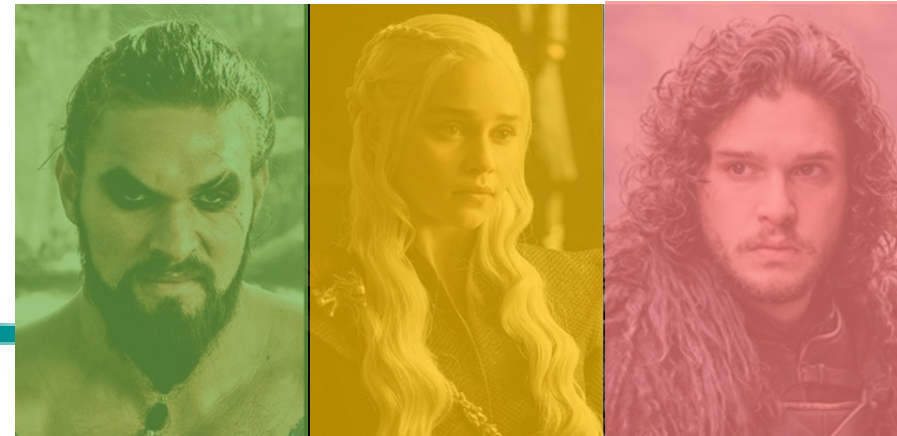
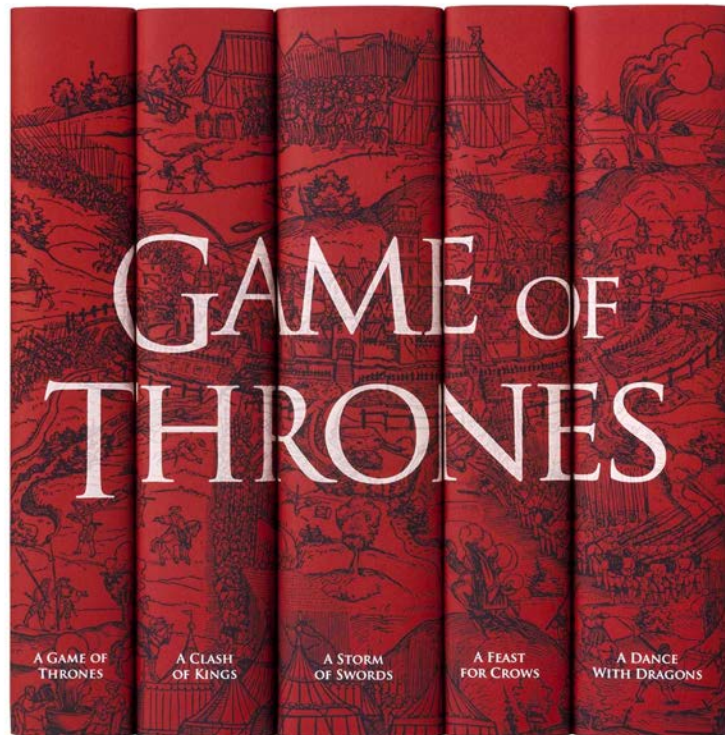


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INTERVENCIÓ:



CONCLUSIONS



Moltes gràcies i a disposar!



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