

La «fragilità»: una sindrome geriatrica

La «fragilità»: una sindrome geriatrica

stato di completo benessere fisico, mentale e sociale e non semplice assenza di malattia (OMS, 1948)

“the ability to adapt and self-manage” in the face of social, physical, and emotional challenges

“la capacità di adattarsi e mantenersi in discreta autonomia nonostante le problematiche sociali, fisiche e psico-cognitive»

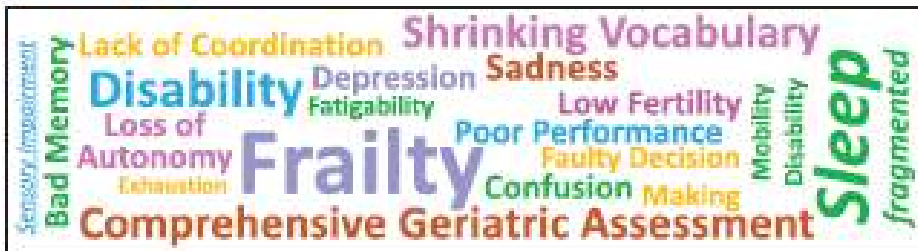
Time and the Metrics of Aging

Luigi Ferrucci, Morgan E. Levine, Pei-Lun Kuo, Eleanor M. Simonsick

The Metrics of Aging

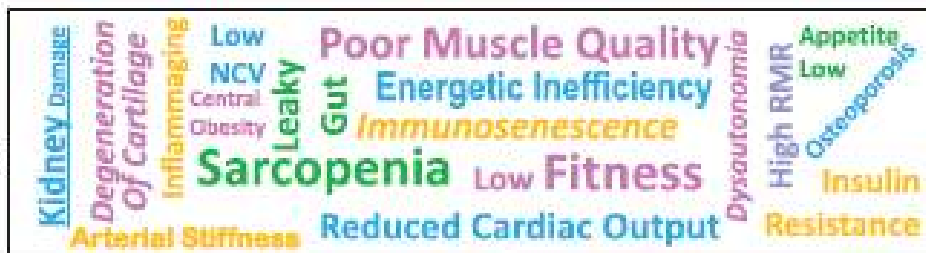
Functional Aging (impact on daily life)

- Cognitive Function
- Physical Function
- Mood
- Mental Health



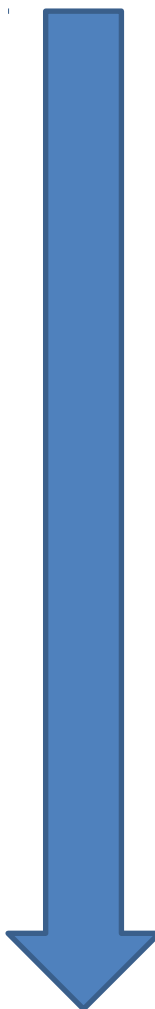
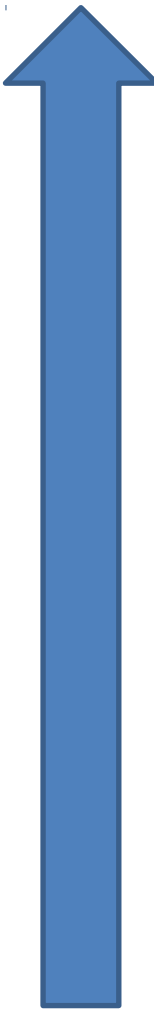
Phenotypic Aging (phenotypes that change)

- Body Composition
- Energetics
- Homeostatic Mechanisms
- Brain health



Biological Aging (root mechanisms)

- Molecular Damage
- Defective Repair
- Energy Exhaustion
- Signal/Noise Reduction



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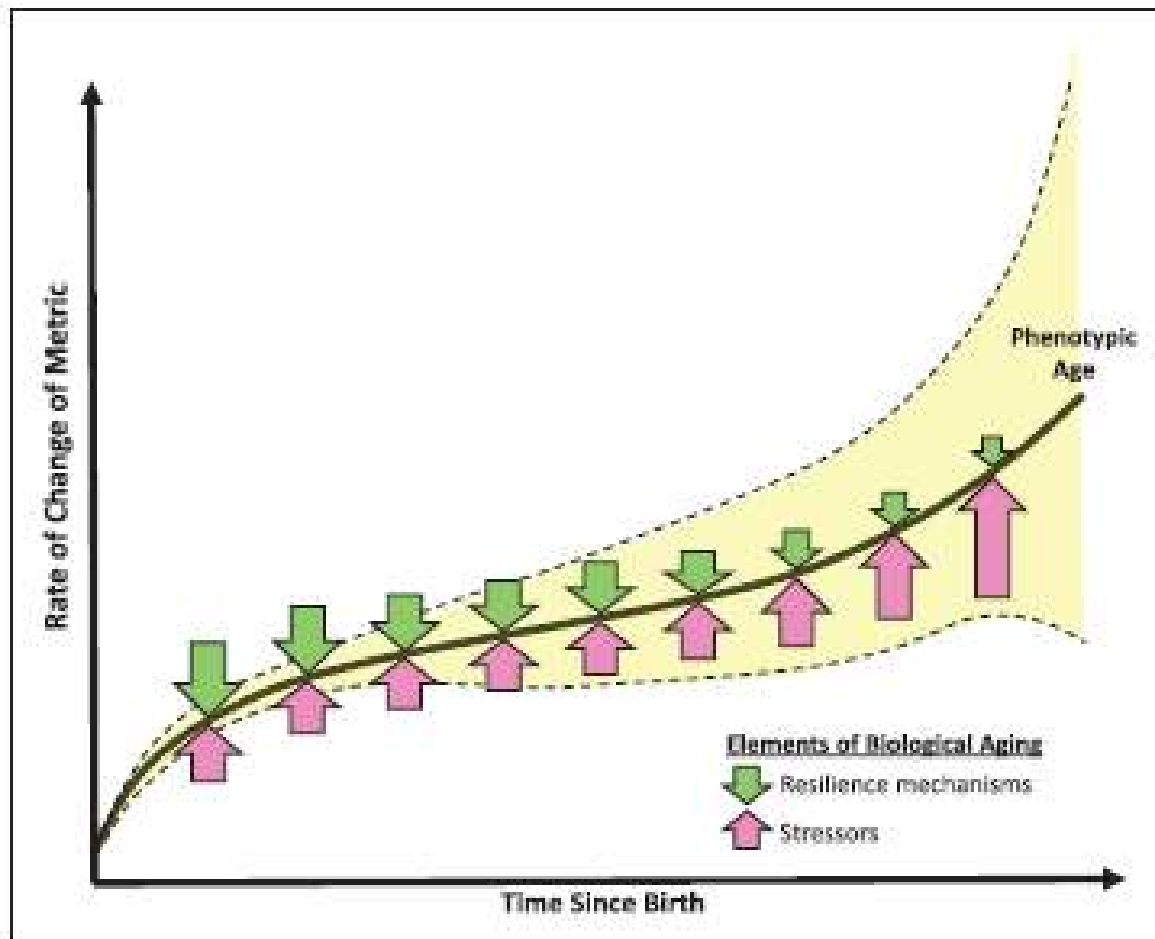


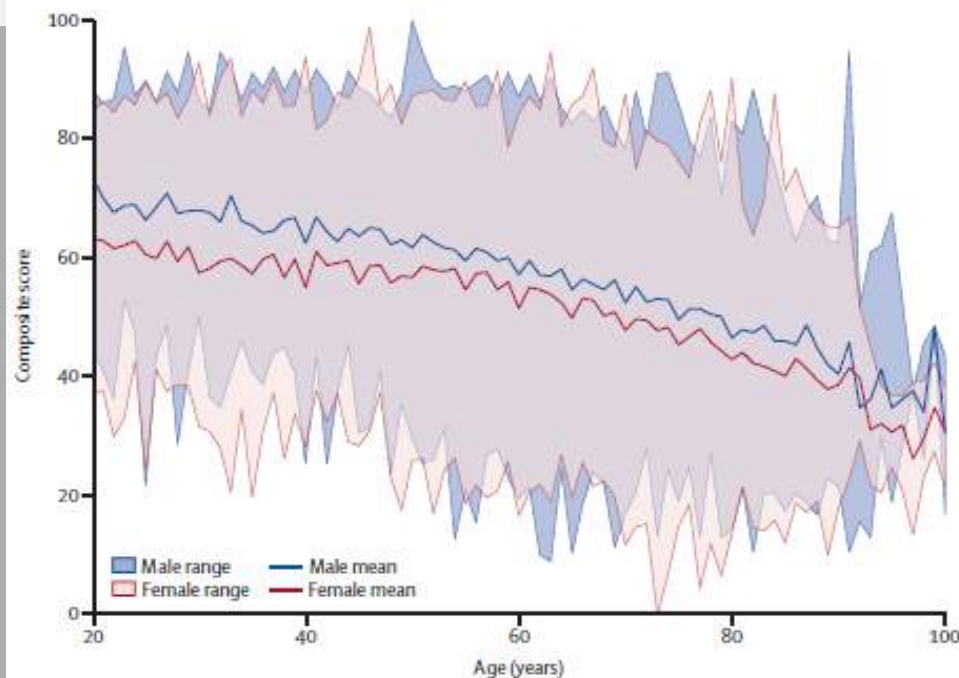
Figure 2. Graphic representation of the trajectory of aging and the interaction between entropic and compensatory mechanisms in affecting the rate of aging. Note that the trajectory shows little variability early in life, whereas the variability expands substantially later in life.

The World report on ageing and health: a policy framework for healthy ageing



Lancet 2016; 387: 2145-54

Figure 3: Range and mean intrinsic capacity of men and women in countries in the Study on global AGEing and adult health 2007-2010 (wave 1)^a



La **capacità intrinseca** di una persona è la sommatoria delle **capacità o potenzialità fisiche e mentali** di un individuo in ogni momento della sua vita

**Alta
capacità
intrinseca**

Cattive

Condizioni di salute

Ottime

Deteriorato

Status psico-mentale

Integro

Compromessa

Integrità fisica

Conservata

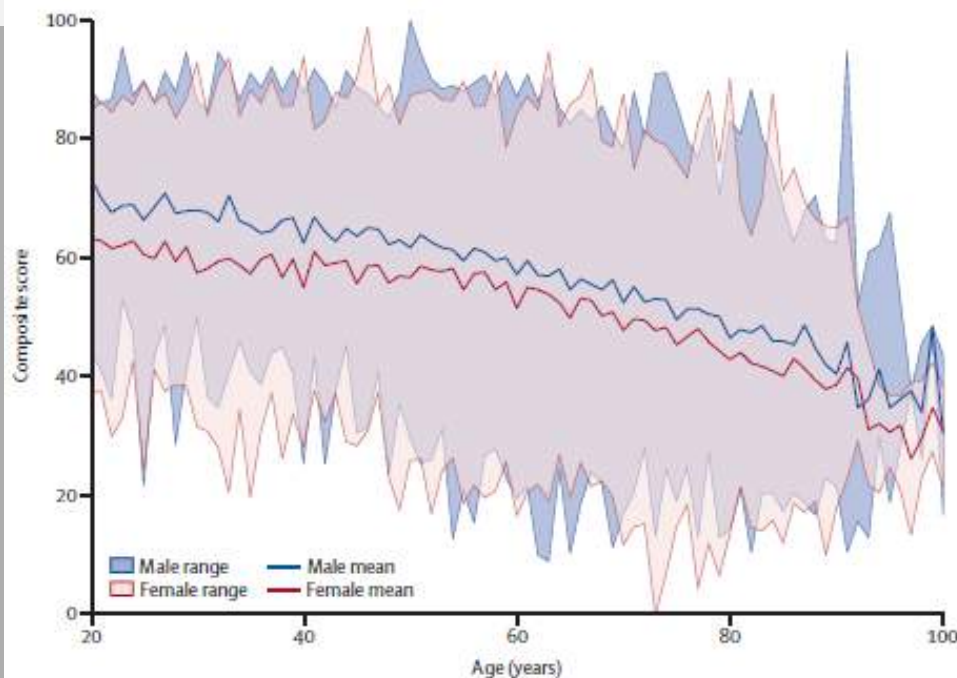
**Bassa
capacità
intrinseca**

The World report on ageing and health: a policy framework for healthy ageing

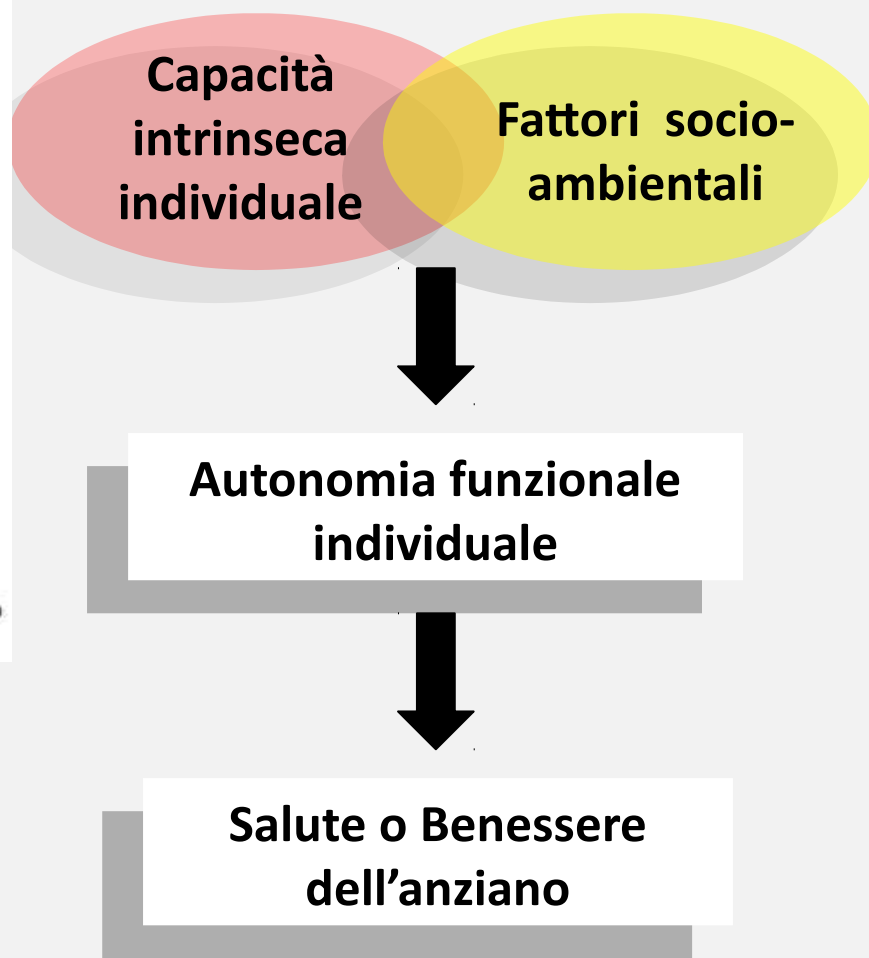


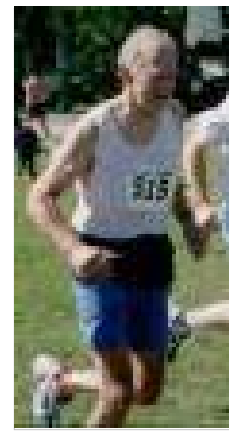
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Figure 3: Range and mean intrinsic capacity of men and women in countries in the Study on global AGEing and adult health 2007-2010 (wave 1)^a



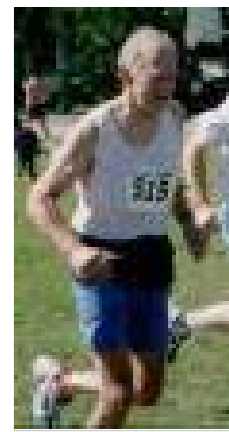
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Che cosa è la «fragilità» e chi è l'anziano «fragile»?





Da un punto di vista geriatrico, la sindrome della **FRAGILITA'** è uno dei molteplici domains esplorati nella **Valutazione Geriatrica Multidimensionale** dell'anziano, sulla base della quale è possibile effettuare un'adeguata stratificazione prognostica dell'anziano e definire i percorsi terapeutici medici e procedurali più appropriati.

Di contro, nel lessico comune, il termine **ANZIANO FRAGILE** viene solitamente utilizzato in modo soggettivo per identificare un paziente che in ragione di comorbidità, precario stato di salute generale, ridotta o marginale autonomia funzionale, impairment cognitivo, presenta una prognosi precaria e incerti benefici da procedure interventistiche o terapie mediche

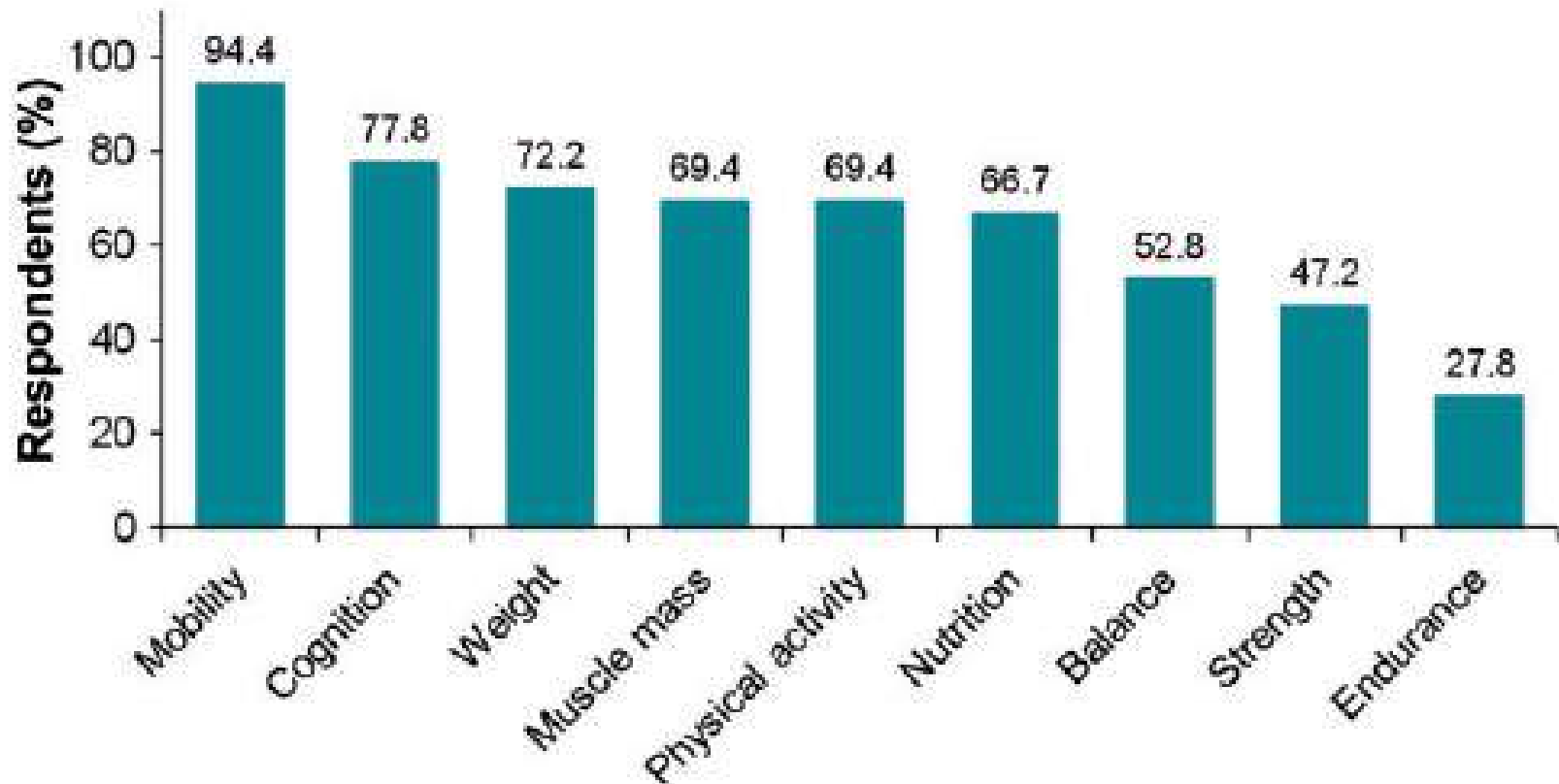


Frailty syndrome: an emerging clinical problem in the everyday management of clinical arrhythmias. The results of the European Heart Rhythm Association survey

Europace (2017) 19, 1896–1902

Stefano Fumagalli^{1*}, Tatjana S. Potpara², Torben Bjerregaard Larsen³,
Kristina H. Haugaa⁴, Dan Dobreanu⁵, Alessandro Proclemer⁶, and Nikolaos Dages⁷

Features that characterize frailty syndrome according to the participants' opinion.



Frailty in Older Adults: Evidence for a Phenotype

Linda P. Fried,¹ Catherine M. Tangen,² Jeremy Walston,¹ Anne B. Newman,³ Calvin Hirsch,⁴
John Gottdiener,⁵ Teresa Seeman,⁶ Russell Tracy,⁷ Willem J. Kop,⁸ Gregory Burke,⁹
and Mary Ann McBurnie² for the Cardiovascular Health Study
Collaborative Research Group

Increasingly, geriatricians define frailty as a biologic syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems, and causing vulnerability to adverse outcomes (9–13). This concept distinguishes frailty from disability (9,10,14,15). There is a growing consensus that markers of frailty include age-associated declines in lean body mass, strength, endurance, balance, walking performance, and low activity (9,10,14–17), and that multiple components must be present clinically to constitute frailty



Frailty in Older Adults: Evidence for a Phenotype

Linda P. Fried,¹ Catherine M. Tangen,² Jeremy Walston,¹ Anne B. Newman,³ Calvin Hirsch,⁴

Table 1. Operationalizing a Phenotype of Frailty

A. <i>Characteristics of Frailty</i>	B. <i>Cardiovascular Health Study Measure*</i>	CHS
Shrinking: Weight loss (unintentional) Sarcopenia (loss of muscle mass)	Baseline: >10 lbs lost unintentionally in prior year	
Weakness	Grip strength: lowest 20% (by gender, body mass index)	
Poor endurance; Exhaustion	"Exhaustion" (self-report)	
Slowness	Walking time/15 feet: slowest 20% (by gender, height)	
Low activity	Kcals/week: lowest 20% males: <383 Kcals/week females: <270 Kcals/week	
	C. <i>Presence of Frailty</i>	
	Positive for frailty phenotype: ≥ 3 criteria present	
	Intermediate or prefrail: 1 or 2 criteria present	

*See Appendix.

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Table 6. Incidence of Adverse Outcomes Associated With Frailty: Kaplan-Meier Estimates at 3 Years and 7 Years* After Study Entry for Both of the Cohorts† (N = 5317)

Frailty Status at Baseline	(n)	Died		First Hospitalization		First Fall		Worsening ADL Disability		Worsening Mobility Disability	
		3 yr %	7 yr %	3 yr %	7 yr %	3 yr %	7 yr %	3 yr %	7 yr %	3 yr %	7 yr %
Not Frail	(2469)	3	12	33	79	15	27	8	23	23	41
Intermediate	(2480)	7	23	43	83	19	33	20	41	40	58
Frail	(368)	18	43	59	96	28	41	39	63	51	71
<i>p</i> [‡]		<.0001		<.0001		<.0001		<.0001		<.0001	

*7-year estimates are only available for the first cohort.

†Only those evaluable for frailty are included.

‡*p* value is based on the 2 degree of freedom log rank test using all available follow-up.

Comparison of 2 Frailty Indexes for Prediction of Falls, Disability, Fractures, and Death in Older Women

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*See Appendix.

VS

SOF Index

(Study of Osteoporotic Fractures) 2
or more of:

- Weight loss $\geq 5\%$
- Inability to raise from a chair 5
times without using arms
- Reduced energy level
("Do you feel full of energy?" No")

None criteria: **ROBUST**

One criteria: **PREFRAIL**

A SIMPLE FRAILTY QUESTIONNAIRE (FRAIL) PREDICTS OUTCOMES IN MIDDLE AGED AFRICAN AMERICANS

Table 1. The “FRAIL” Scale

Fatigue
Resistance (ability to climb 1 flight of stairs)
Ambulation (ability to walk 1 block)
Illnesses (greater than 5)
Loss of Weight (>5%)

0 points: **ROBUST**

1-2 points: **PREFRAIL**

3-5 points: **FRAIL**

Affaticabilità: quante volte nelle ultime 4 settimane si è sentito/a stanco/a? (R: sempre o per lo più: 1 punto)

Resistenza: ha difficoltà a salire 10 gradini senza aiuto? (R: sì: 1 punto)

Deambulazione: ha difficoltà a camminare per alcune centinaia di metri senza aiuto? (R: sì: 1 punto)

Malattie: 1 punto per chi riferisce ≥ 5 malattie (in una lista di 11)

Perdita di peso: 1 punto per chi riferisce calo ponderale $>5\%$ ultimo anno

Conclusion—This study has validated the FRAIL scale in a late middle-aged African American population. This simple 5-question scale is an excellent screening test for clinicians to identify frail persons at risk of developing disability as well as decline in health functioning and mortality.

Prognostic Significance of Potential Frailty Criteria

Marc D. Rothman, MD, Linda Leo-Summers, MPH,† and Thomas M. Gill, MD**

CONCLUSION: The results of this study provide strong evidence to support the use of slow gait speed, low physical activity, weight loss, and cognitive impairment as key indicators of frailty while raising concerns about the value of self-reported exhaustion and muscle weakness. *J Am Geriatr Soc* 56:2211–2216, 2008.

Frailty in Older Adults: Evidence for a Phenotype

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>65 anni: 5-10%
>75 anni: 20-30%
>85 anni: 30-60%

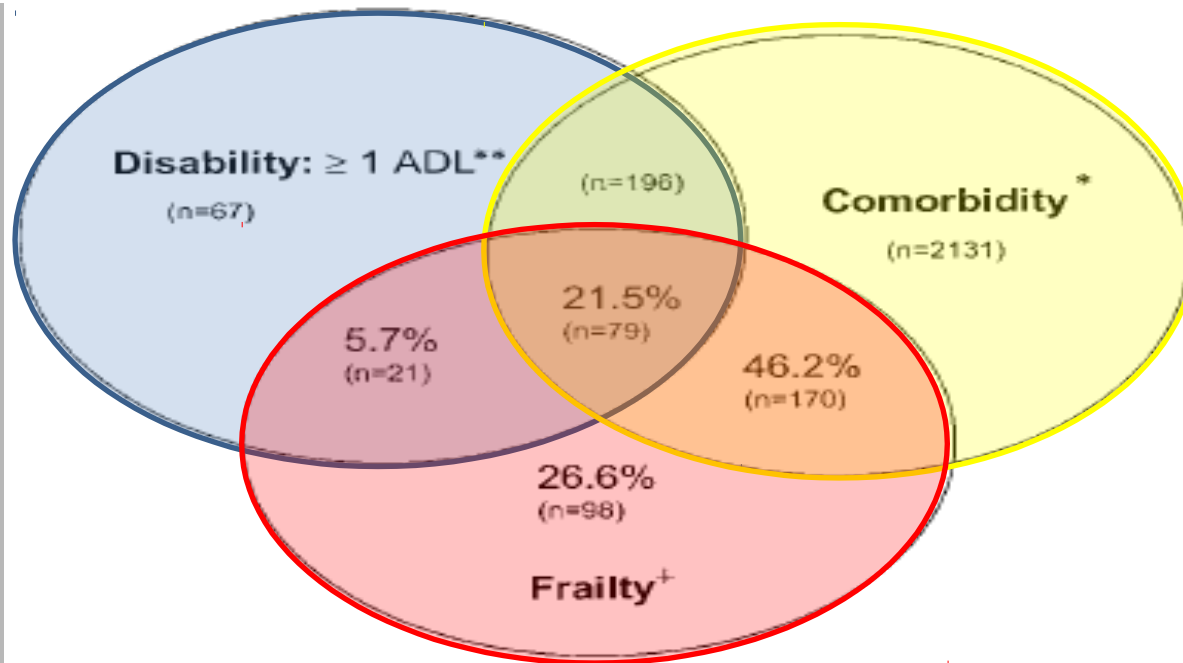


Figure 3. Venn diagram displaying extent of overlap of frailty with ADL disability and comorbidity (≥ 2 diseases). Total represented: 2,762 subjects who had comorbidity and/or disability and/or frailty. *n* of each subgroup indicated in parentheses. + Frail: overall *n* = 368 frail subjects (both cohorts). *Comorbidity: overall *n* = 2,576 with 2 or more out of the following 9 diseases: myocardial infarction, angina, congestive heart failure, claudication, arthritis, cancer, diabetes, hypertension, COPD. Of these, 249 were also frail. **Disabled: overall *n* = 363 with an ADL disability; of these, 100 were frail.

FRAILTY

Survival curve estimates according to **FRAILTY** status

J. Gerontol: Med Sci 2001;56 A: M146-M156

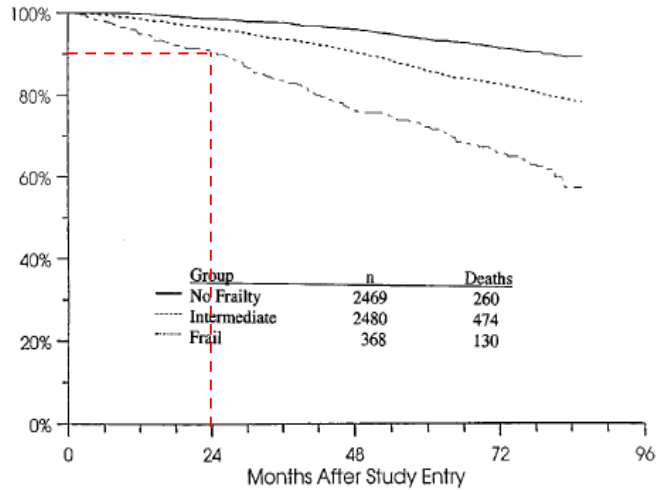
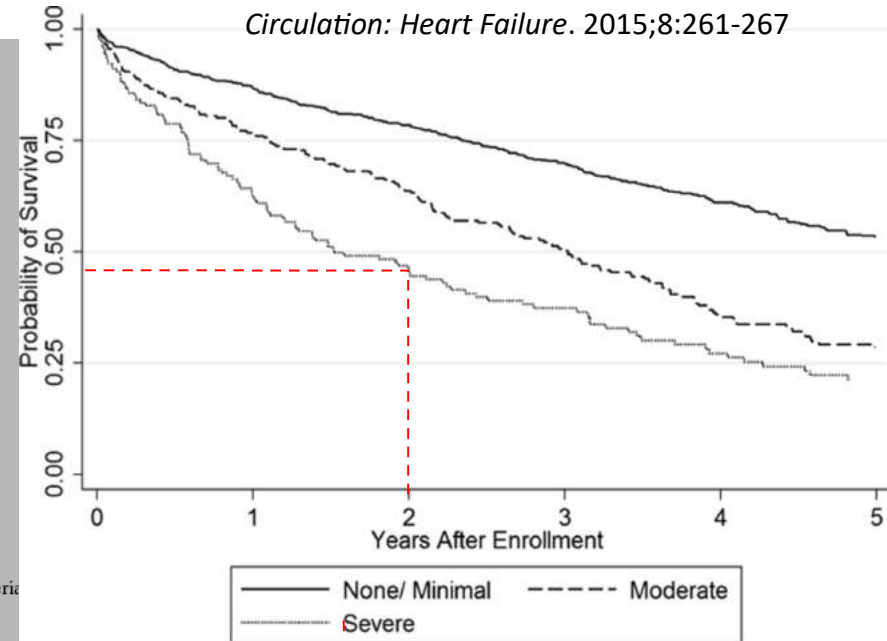


Figure 4. Survival curve estimates (unadjusted) over 72 months of follow-up by frailty status at baseline: Frail (3 or more criteria present); Intermediate (1 or 2 criteria present); Not frail (0 criteria present). (Data are from both cohorts.)

DISABILITY

Time to death in patients with HF according to their level of difficulty with **ADLs** (none/minimal, moderate, severe)

Circulation: Heart Failure. 2015;8:261-267



VALUTAZIONE GERIATRICA MULTIDIMENSIONALE

COMORBILITA' & FARMACI

CONDIZIONI PSICHICHE E MENTALI
(MMSE-SPMSQ, GDS, 4AT-CAM, ecc)

STATO FUNZIONALE
(ADL-IADL, BARTHEL INDEX)

STATO NUTRIZIONALE (MNA)

MOBILITA' & RISCHIO CADUTE (BARTHEL MOBILITA', SPPB, TINETTI)

SARCOPENIA & FRAGILITA' (EWGS, CHS, SOF, FRAIL, GREEN)

STRATIFICAZIONE PROGNOSTICA (MPI)

OTTIMIZZAZIONE DEGLI INTERVENTI TERAPEUTICI, SELEZIONE PREPROCEDURALE E

DEFINIZIONE PERCORSI DI CURA

INTERVENTI RIABILITATIVI/RIATTIVATIVI

IDENTIFICAZIONE DEI SETTING DI CURA

SCORE PROGNOSTICO di mortalità ad 1 anno

Table 1. MPI Score Assigned to Each Domain Based on the Severity of the Problems

Assessment	Problems		
	No (Value=0)	Minor (Value=0.5)	Severe (Value=1)
ADL*	6-5	4-3	2-0
Instrumental ADL*	8-6	5-4	3-0
Short portable mental status questionnaire†	0-3	4-7	8-10
Comorbidity index (cumulative illness rating scale-CI)‡	0	1-2	≥3
Mini nutritional assessment§	≥24	17-23.5	<17
Exton-smith scale¶	16-20	10-15	5-9
No. of medications	0-3	4-6	≥7
Social support network	Living with family	Institutionalized	Living alone

*No. of active functional activities.

†No. of errors.

‡No. of diseases.

§Mini Nutritional Assessment score: ≥24, satisfactory nutritional status; 17-23.5, at risk of malnutrition; <17, malnutrition.

¶Exton-Smith Scale score: 16-20, minimum risk; 10-15, moderate risk; 5-9 high risk of developing scores.

Basso rischio

(≤ 0,33)

Medio rischio

(≥ 0,33 ≤ 0,66)

Alto rischio

(≥ 0,67)

Fragilità: nel linguaggio medico, facilità a rompersi, o diminuita resistenza a traumi

Treccani

Fragile: Che oppone scarsa resistenza al male fisico e morale, quindi debole, gracile

Treccani



CHS frailty scale
SOF frailty scale
SPPB & gait speed
GREEN score



Sindrome «FRAGILITA'»

FRAIL scale
Vulnerable Elders Survey-13
Groningen Frailty Indicator (GFI)



Scale «ibride»
(con aspetti funzionali o di comorbidità)

Clinical Frailty Scale
Frailty Index (Rockwood)



**Paziente VULNERABILE,
COMPROMESSO,
in cattivo stato di salute
generale**

Clinical Research

The Effect of Bleeding Risk and Frailty Status on Anticoagulation Patterns in Octogenarians With Atrial Fibrillation: The FRAIL-AF Study

Clinical Frailty Scale*



1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.



2 Well – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.



3 Managing Well – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.



4 Vulnerable – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being “slowed up”, and/or being tired during the day.



5 Mildly Frail – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



6 Moderately Frail – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



7 Severely Frail – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).



8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.



9. Terminally Ill - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.

2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005; 173:489-495.

A global clinical measure of fitness and frailty in elderly people

Kenneth Rockwood, Xiaowei Song, Chris MacKnight, Howard Bergman, David B. Hogan, Ian McDowell, Arnold Mitnitski

FRAILTY INDEX **(INDICE PROGNOSTICO)**

Appendix 1: List of variables used by the Canadian Study of Health and Aging to construct the 70-item CSHA Frailty Index

- Changes in everyday activities
- Head and neck problems
- Poor muscle tone in neck
- Bradykinesia, facial
- Problems getting dressed
- Problems with bathing
- Problems carrying out personal grooming
- Urinary incontinence
- Toileting problems
- Bulk difficulties
- Rectal problems
- Gastrointestinal problems
- Problems cooking
- Sucking problems
- Problems going out alone
- Impaired mobility
- Musculoskeletal problems
- Bradykinesia of the limbs
- Poor muscle tone in limbs
- Poor limb coordination
- Poor coordination, trunk
- Poor standing posture
- Irregular gait pattern
- Falls
- Mood problems
- Feeling sad, blue, depressed
- History of depressed mood
- Tiredness all the time
- Depression (clinical impression)
- Sleep changes
- Restlessness
- Memory changes
- Short-term memory impairment
- Long-term memory impairment
- Changes in general mental functioning
- Onset of cognitive symptoms
- Clouding or delirium
- Paranoid features
- History relevant to cognitive impairment or loss
- Family history relevant to cognitive impairment or loss
- Impaired vibration
- Tremor at rest
- Postural tremor
- Intention tremor
- History of Parkinson's disease
- Family history of degenerative disease
- Seizures, partial complex
- Seizures, generalized
- Syncope or blackouts
- Headache
- Cerebrovascular problems
- History of stroke
- History of diabetes mellitus
- Arterial hypertension
- Peripheral pulses
- Cardiac problems
- Myocardial infarction
- Arrhythmia
- Congestive heart failure
- Lung problems
- Respiratory problems
- History of thyroid disease
- Thyroid problems
- Skin problems
- Malignant disease
- Breast problems
- Abdominal problems
- Presence of snout reflex
- Presence of the palmomental reflex
- Other medical history

FRAILTY

Survival curve estimates according to **FRAILTY** status

J. Gerontol: Med Sci 2001;56 A: M146-M156

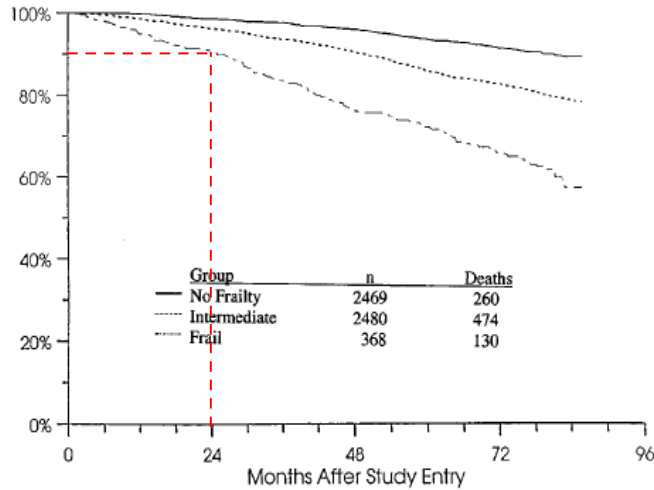
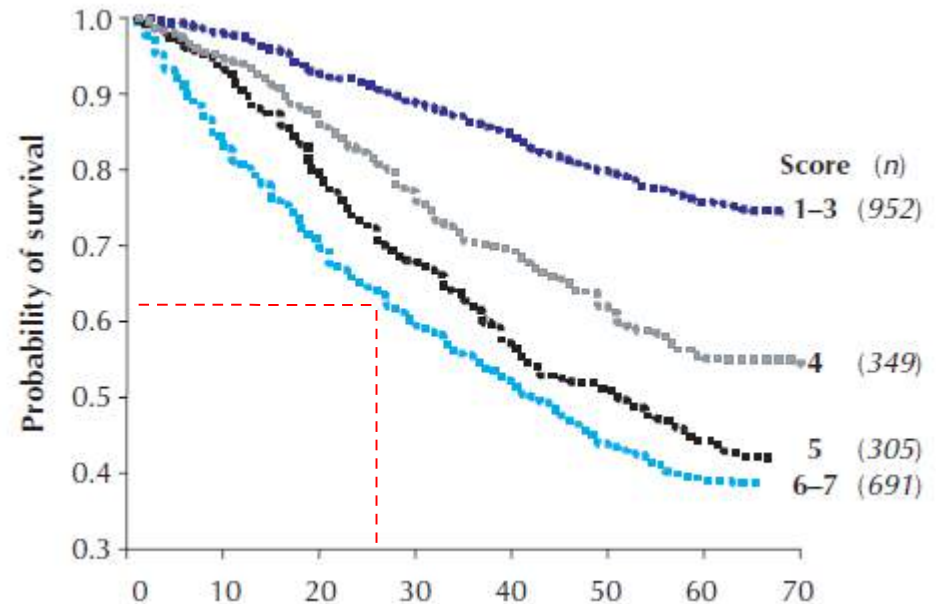
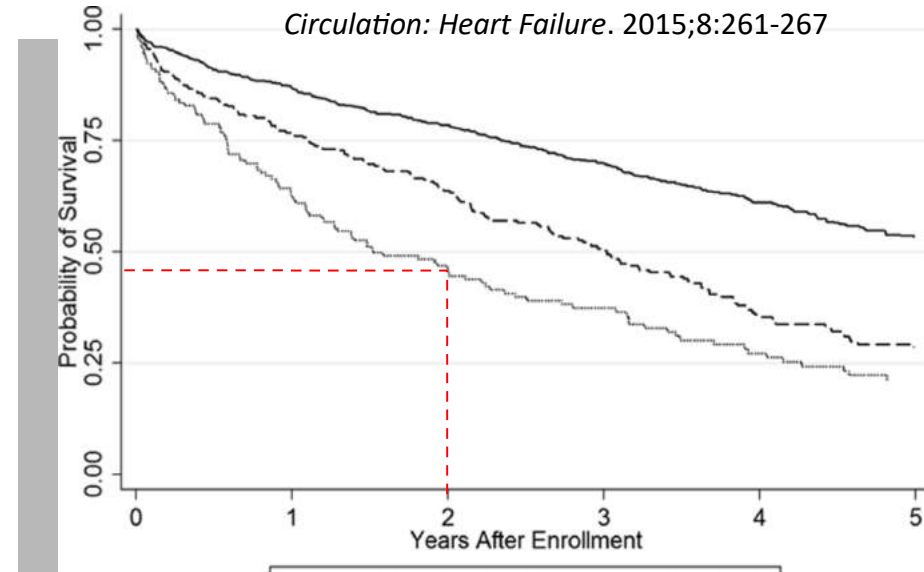


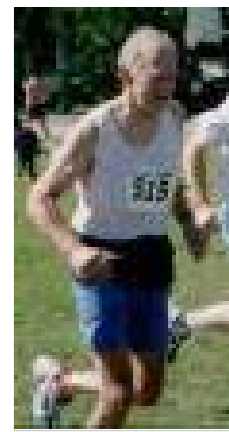
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DISABILITY

Time to death in patients with HF according to their level of difficulty with **ADLs** (none/minimal, moderate, severe)

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Quali sono le cause della «fragilità»?

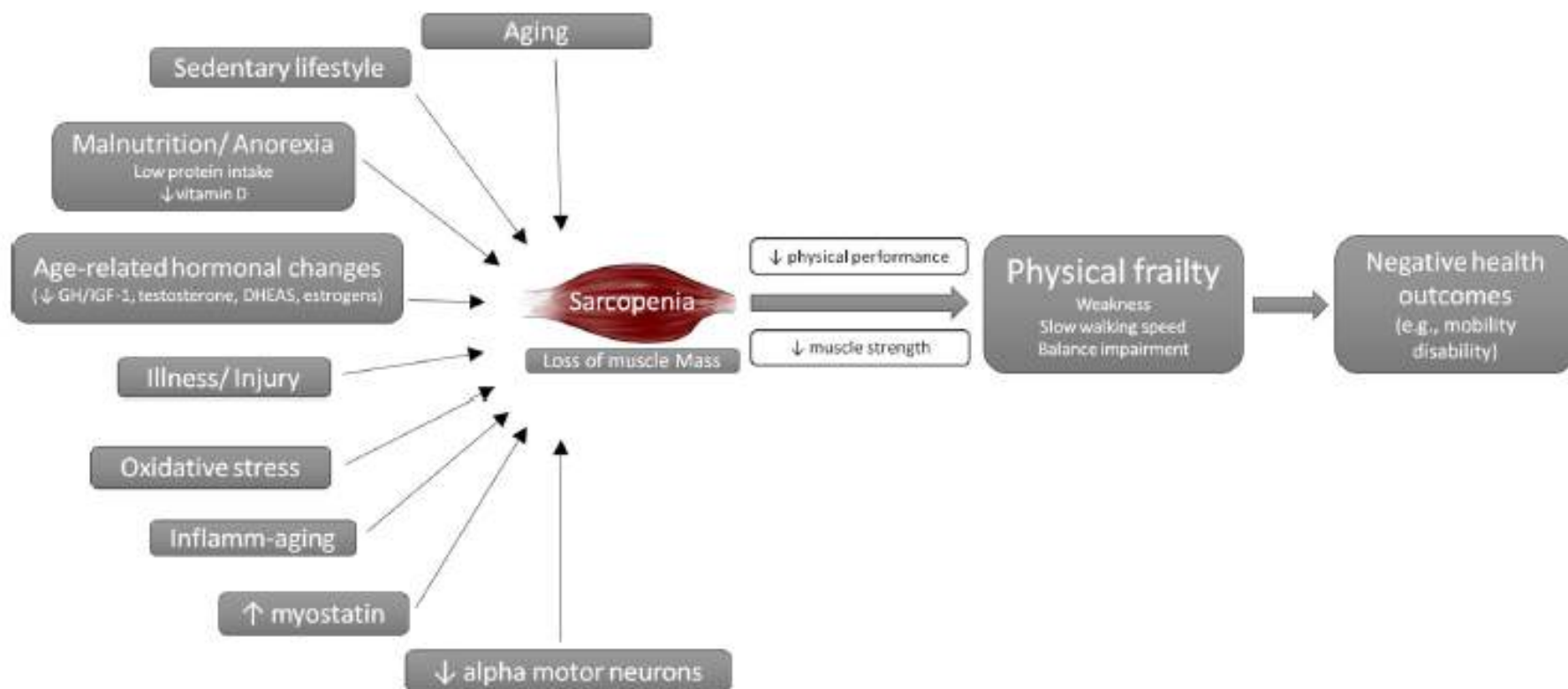


Sarcopenia and frailty: From theoretical approach into clinical practice



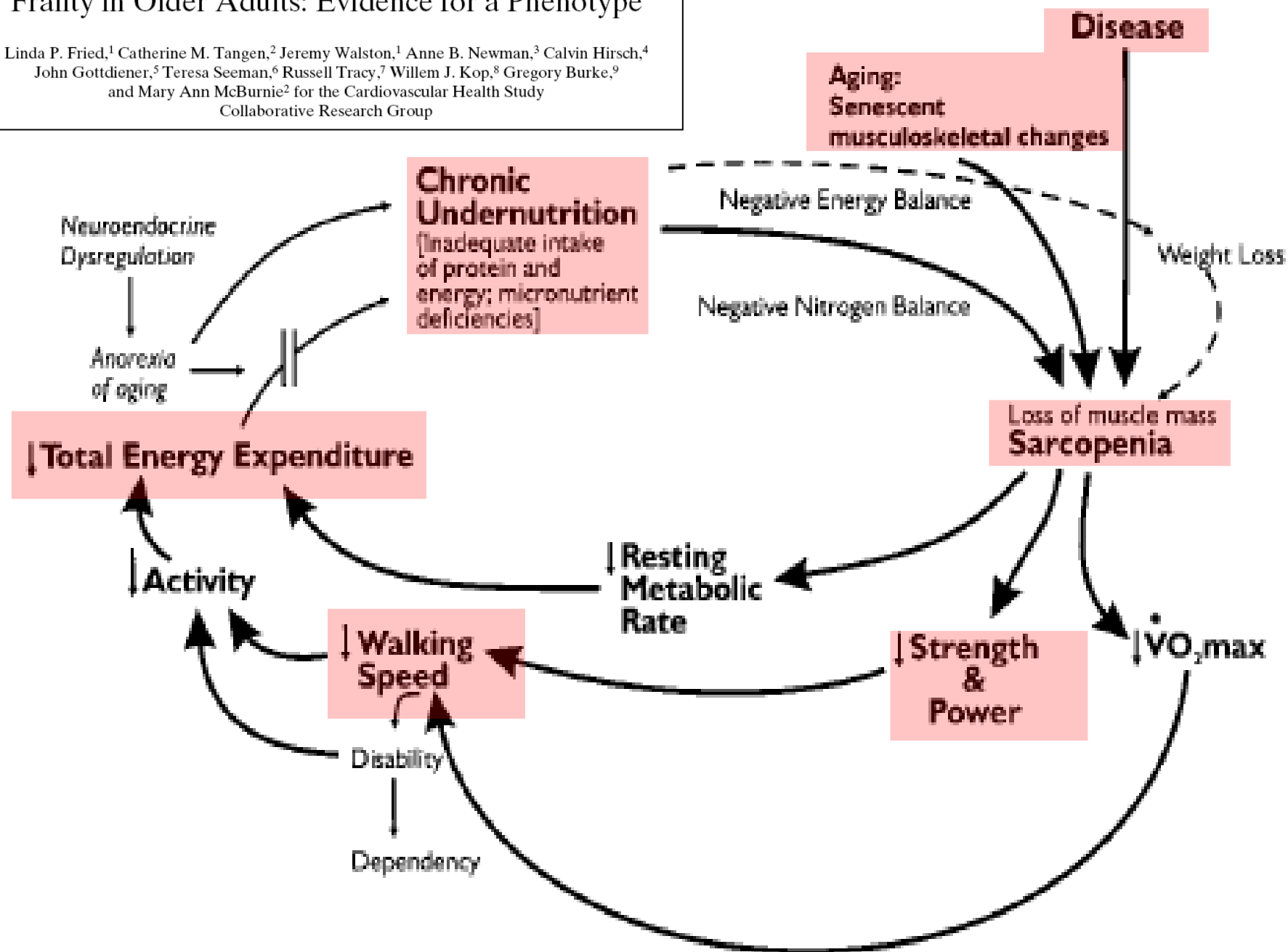
F. Landi^{a,*}, A. Cherubini^b, M. Cesari^c, R. Calvani^a, M. Tosato^a, A. Sisto^a, A.M. Martone^a,
R. Bernabei^a, E. Marzetti^a

European Geriatric Medicine 7 (2016) 197–200



Frailty in Older Adults: Evidence for a Phenotype

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Frailty syndrome: an overview

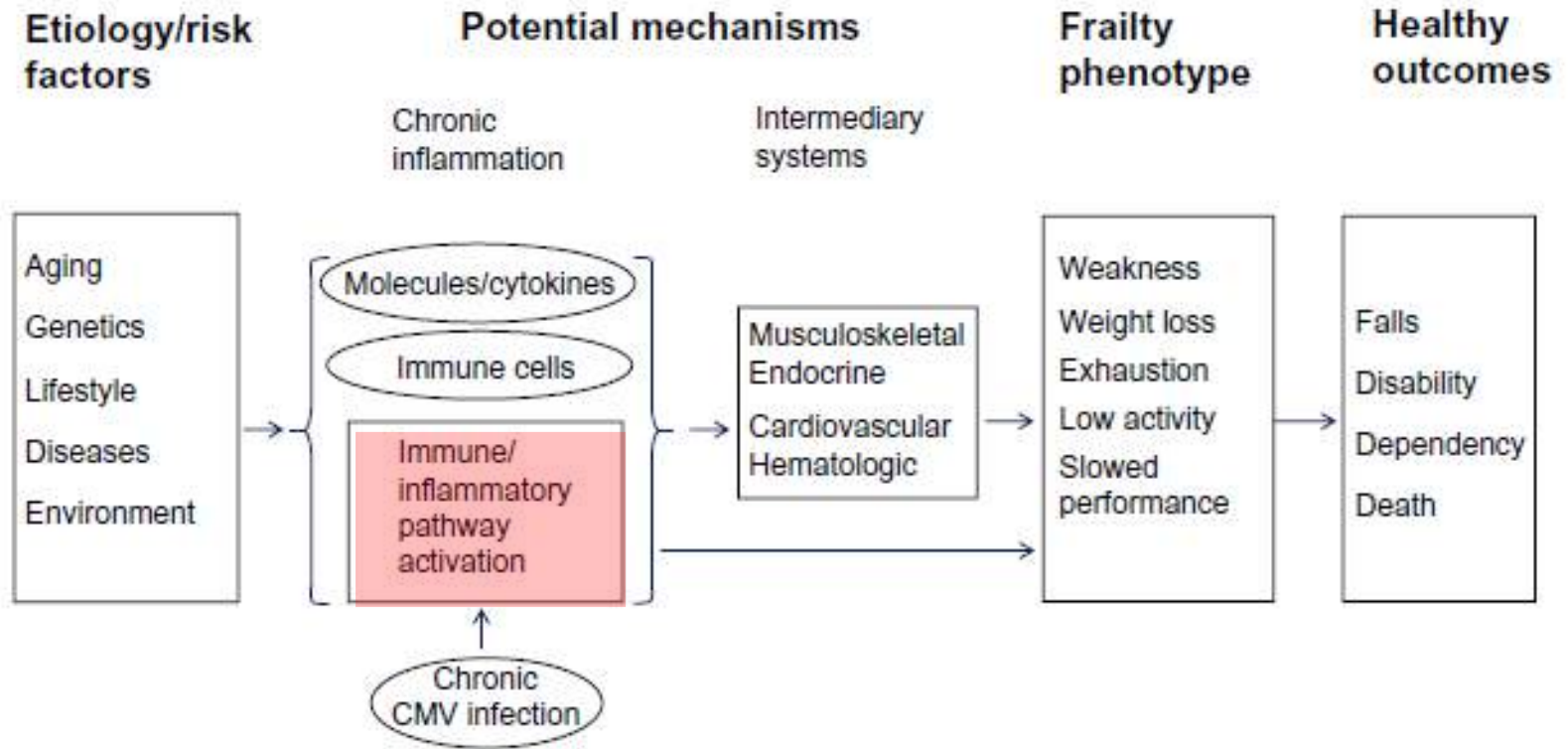


Figure 2 Pathogenesis of the frailty syndrome: current understanding of potential underlying mechanisms and hypothetical modal pathways leading to frailty. Abbreviation: CMV, Cytomegalovirus.

Frailty syndrome: an overview

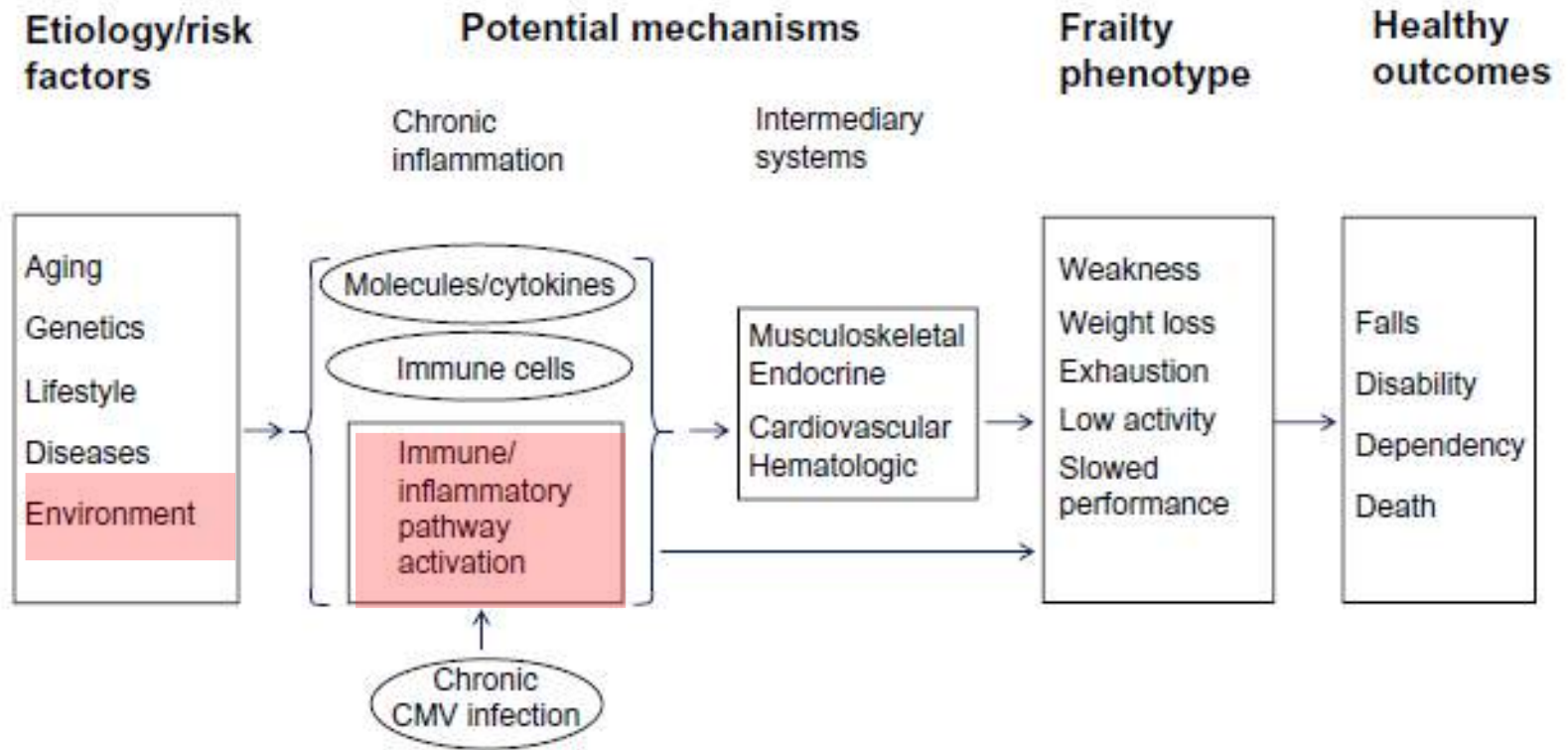


Figure 2 Pathogenesis of the frailty syndrome: current understanding of potential underlying mechanisms and hypothetical modal pathways leading to frailty. Abbreviation: CMV, Cytomegalovirus.

Social isolation and loneliness as risk factors for the progression of frailty: the English Longitudinal Study of Ageing

Age and Ageing 2018; **47**: 392–397

participants were 2,817 people aged ≥ 60 from the English Longitudinal Study of Ageing.

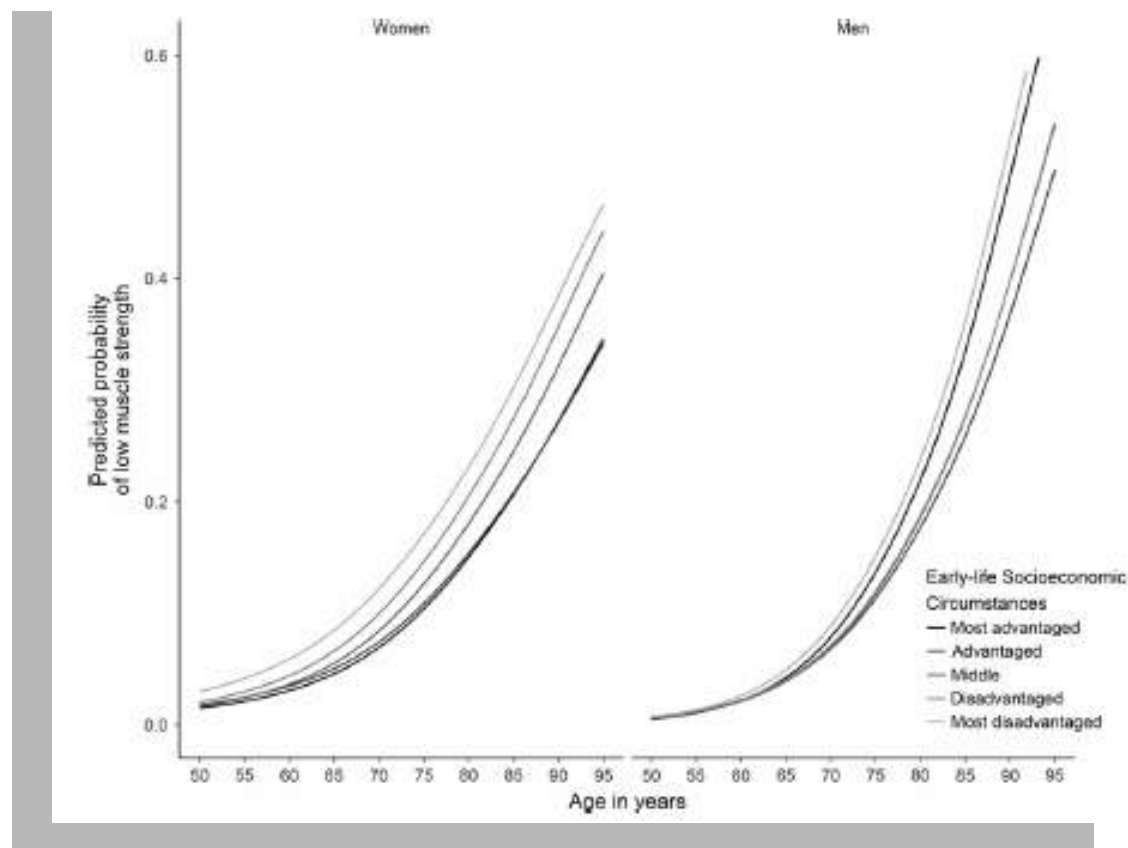
Table 2: Relative risk ratios (95% confidence intervals) of pre-frailty or frailty at Wave 4 according to social isolation or loneliness at baseline ($n = 2,346$)

	RRR (95% CI), adjusted for age, sex & number of components of frailty present at baseline		RRR (95% CI), further adjusted for education, household wealth, depressive symptoms, chronic physical illness & smoking status at baseline	
	Pre-frail	Frail	Pre-frail	Frail
Loneliness				
Low ($n = 1,312$)	Reference	Reference	Reference	Reference
Average ($n = 647$)	1.11 (0.90, 1.36)	1.42 (0.98, 2.06)	1.05 (0.84, 1.32)	1.19 (0.79, 1.78)
High ($n = 387$)	1.91 (1.45, 2.51)***	2.95 (1.95, 4.47)***	1.74 (1.29, 2.34)***	1.85 (1.14, 2.99)*

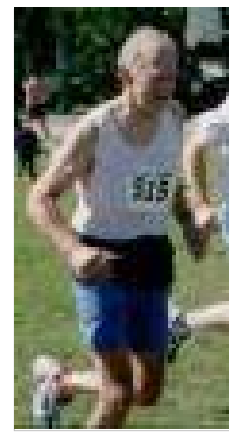
Association of early- and adult-life socioeconomic circumstances with muscle strength in older age

Age and Ageing 2018; **47**: 398–407

socioeconomic circumstances (SEC) during a person's lifespan influence a wide range of health outcomes. data from the Survey of Health Ageing and Retirement in Europe, a 12-year population-based cohort



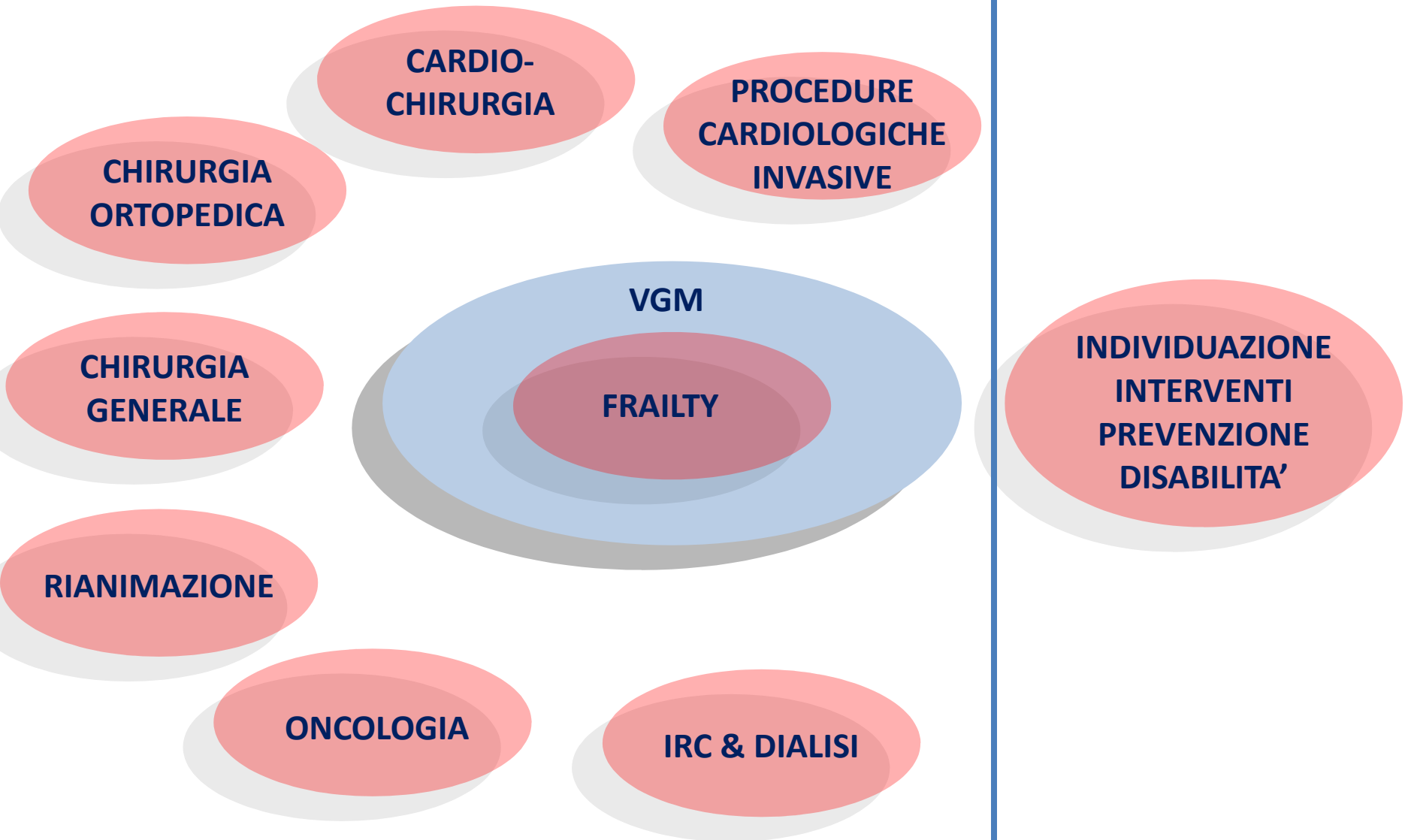
Predicted probability of low muscle strength across age by early-life socioeconomic circumstances (SEC).

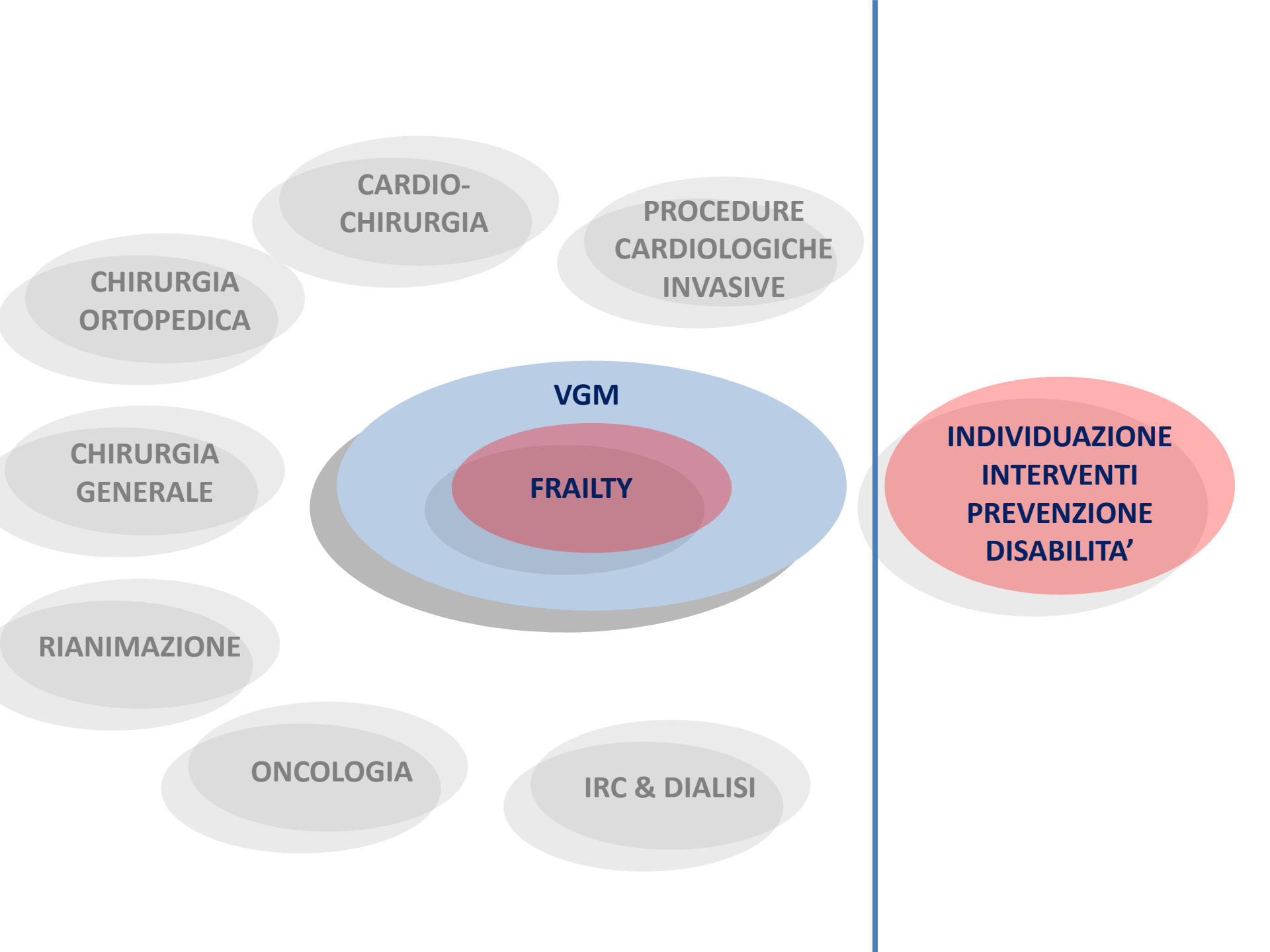


**A cosa serve identificare e valutare la
«fragilità»?**



**SELEZIONE PREPROCEDURALE, OTTIMIZZAZIONE
INTERVENTI E ALLOCAZIONE RISORSE, RIDUZIONE FUTILITA'
TERAPEUTICA E IATROGENESI**





**CARDIO-
CHIRURGIA**

**PROCEDURE
CARDIOLOGICHE
INVASIVE**

**CHIRURGIA
ORTOPEDICA**

VGM

FRAILTY

**INDIVIDUAZIONE
INTERVENTI
PREVENZIONE
DISABILITA'**

**CHIRURGIA
GENERALE**

RIANIMAZIONE

ONCOLOGIA

IRC & DIALISI

Major dietary patterns and risk of frailty in older adults: a prospective cohort study

León-Muñoz et al. *BMC Medicine* (2015) 13:11

Conclusions: In older adults, a prudent (Mediterranean) dietary pattern showed an inverse dose-response relation with the risk of frailty, while a Westernized pattern had a direct relationship with some of the components.

Protein Intake and Muscle Strength in Older Persons: Does Inflammation Matter?

J Am Geriatr Soc 60:480–484, 2012.

Benedetta Bartali, PhD, Edward A. Frongillo, PhD,^{†‡} Martha H. Stipanuk, PhD,[‡] Stefania Bandinelli, MD,[§] Simonetta Salvini, RD,^{||} Domenico Palli, MD, PhD,^{||} Jose A. Morais, MD,[#] Stefano Volpato, MD, MPH,^{**} Jack M. Guralnik, MD, PhD,^{††} and Luigi Ferrucci, MD, PhD^{‡‡}*

In conclusion, these results show a significant effect of the interaction between protein intake and markers of inflammation on muscle strength at follow-up after adjustment for muscle strength at baseline. In persons with high levels of inflammatory markers, lower protein intake was associated with greater decline in muscle strength, independent of the presence of chronic conditions. These findings suggest that high levels of markers of inflammation may alter protein metabolism and the efficiency of protein use. Because this is the first longitudinal study on the

Effects of Exercise Training on Frailty in Community-Dwelling Older Adults: Results of a Randomized, Controlled Trial

Ellen F. Binder, MD,* Kenneth B. Schechtman, PhD,† Ali A. Ehsani, MD,*
Karen Steger-May, MA,† Marybeth Brown, PhD,‡ David R. Sinacore, PhD,‡
Kevin E. Yarasheski, PhD,* and John O. Holloszy, MD*

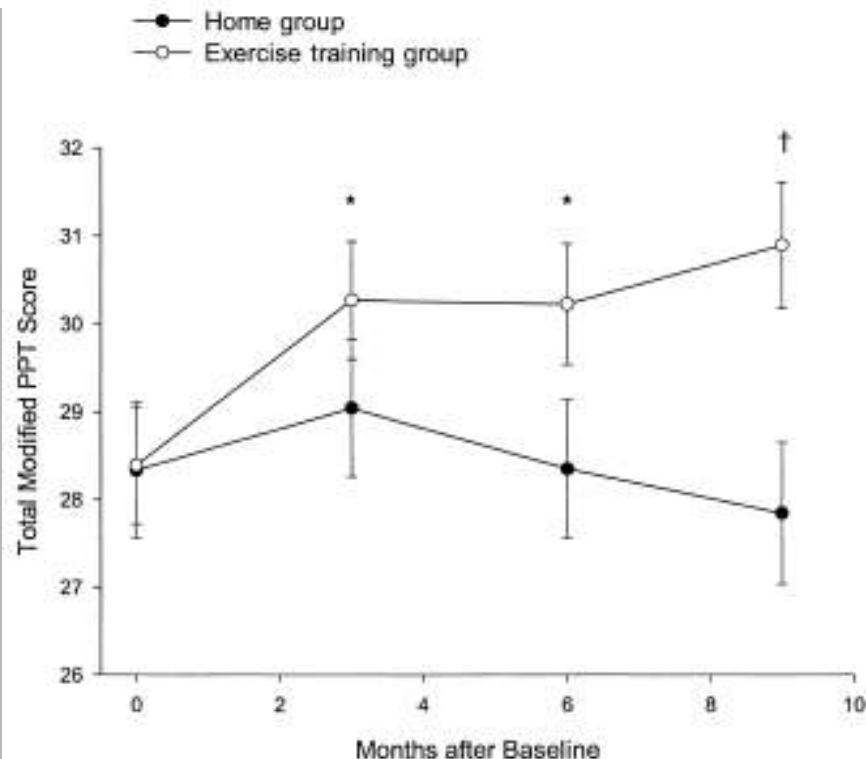


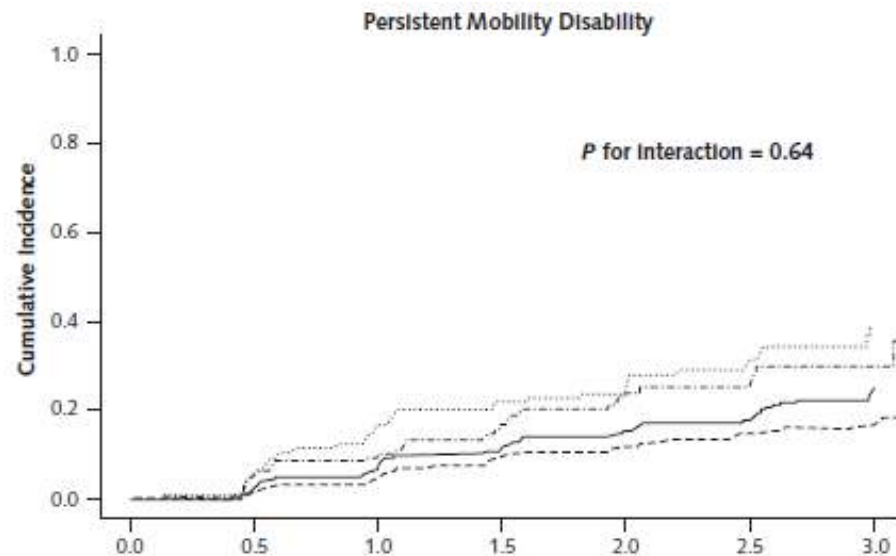
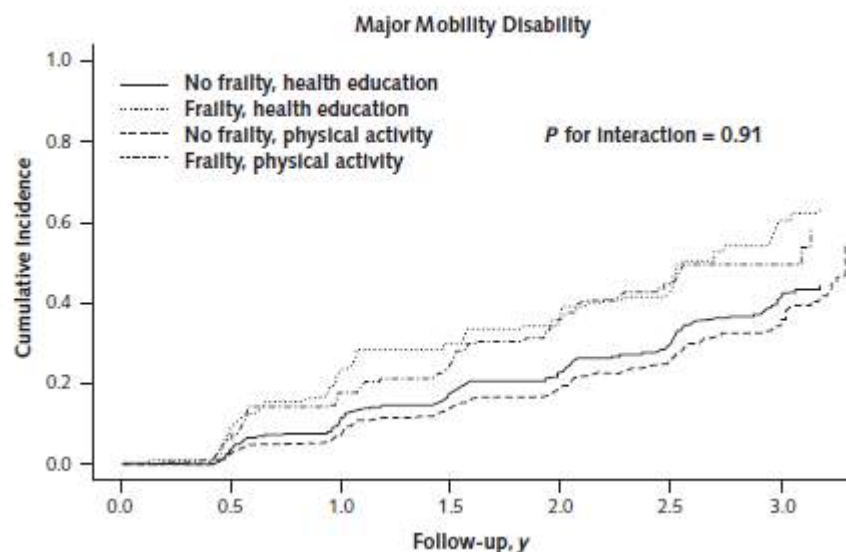
Figure 2. Changes in total modified Physical Performance Score (PPT) from baseline to end of study. Values are means \pm standard deviation. Significantly different from baseline, * $P < .05$; † $P < .01$.

CONCLUSIONS: Our results show that intensive ET can improve measures of physical function and preclinical disability in older adults who have impairments in physical performance and oxygen uptake and are not taking hormone replacement therapy better than a low-intensity home exercise program. *J Am Geriatr Soc* 50:1921-1928, 2002.

Annals of Internal Medicine

Effect of Physical Activity on Frailty

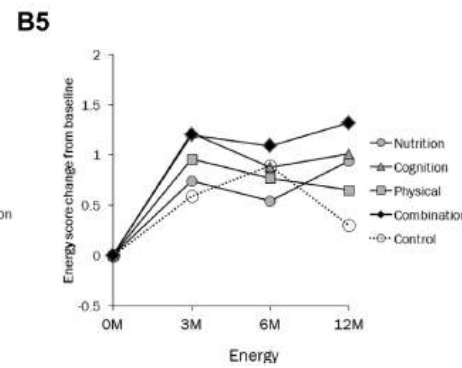
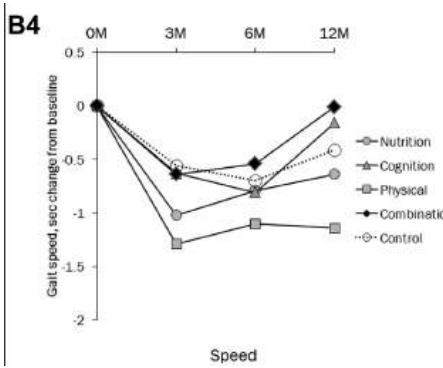
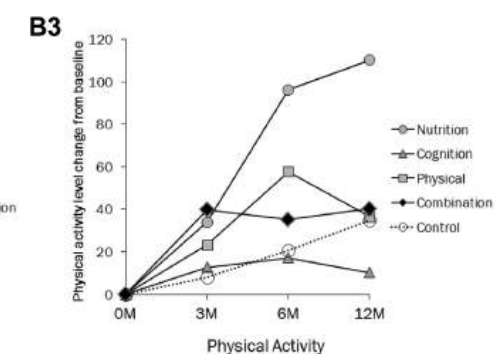
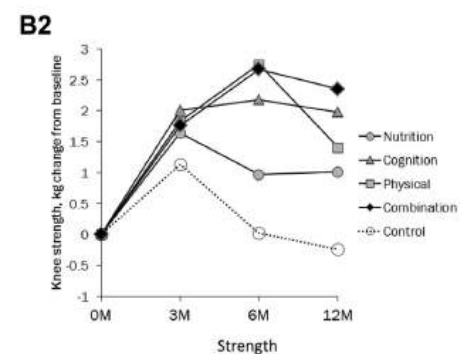
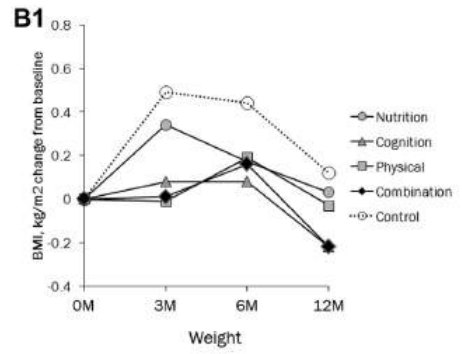
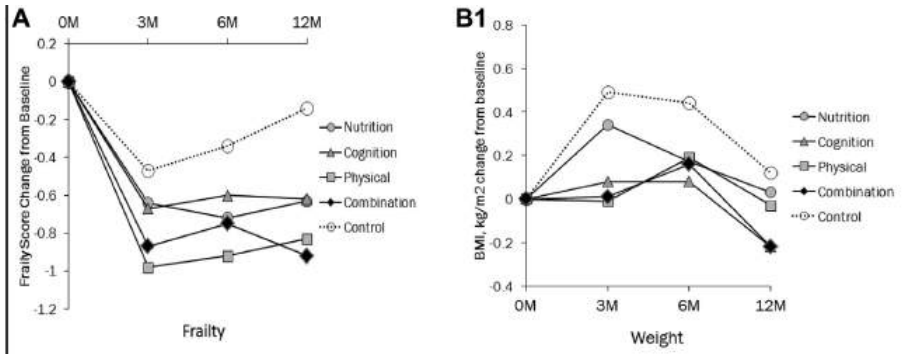
Secondary Analysis of a Randomized Controlled Trial



Limitation: Frailty status was neither an entry criterion nor a randomization stratum.

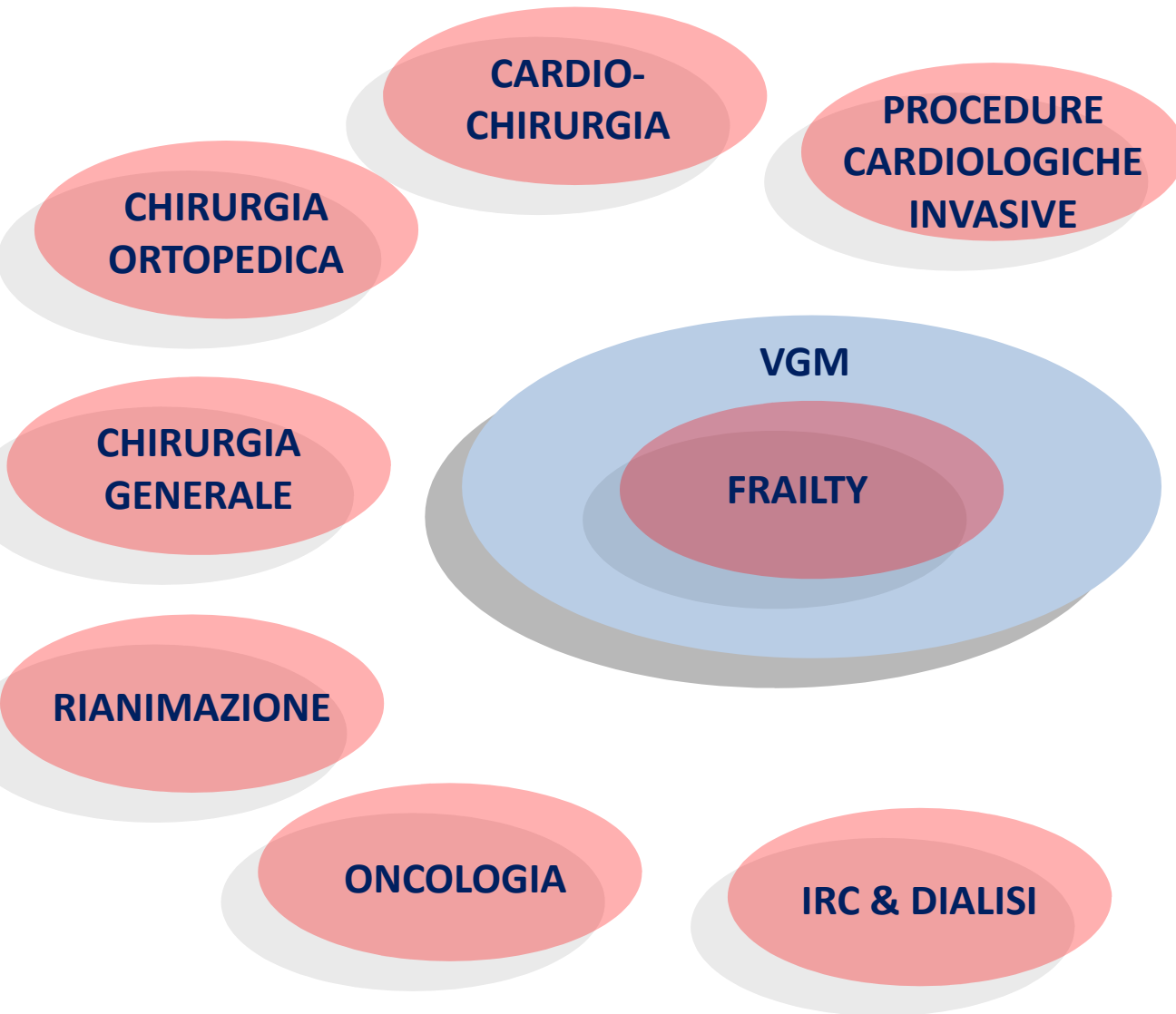
Conclusion: A structured, moderate-intensity physical activity program was not associated with a reduced risk for frailty over 2 years among sedentary, community-dwelling older adults. The beneficial effect of physical activity on the incidence of MMD did not differ between frail and nonfrail participants.

Nutritional, Physical, Cognitive, and Combination Interventions and Frailty Reversal Among Older Adults: A Randomized Controlled Trial



CONCLUSIONS: Physical, nutritional and cognitive interventional approaches were effective in reversing frailty among community-living older persons

SELEZIONE PREPROCEDURALE, OTTIMIZZAZIONE INTERVENTI E ALLOCAZIONE RISORSE, RIDUZIONE FUTILITA' TERAPEUTICA E IATROGENESI



Al netto degli indicatori prognostici «specifici» di ogni specialità, la **Valutazione Geriatrica Multidimensionale**, ivi compresa la **fragilità**, fornisce importanti informazioni aggiuntive che aiutano a definire meglio la **prognosi individuale** e a selezionare gli **interventi più adeguati per ogni paziente anziano**

Predictive Factors of In-Hospital Mortality in Older Patients Admitted to a Medical Intensive Care Unit

J Am Geriatr Soc 51:529-533, 2003.

Mario Bo, MD, Massimiliano Massaia, MD, Silvio Raspo, MD, Francesca Bosco, MD, Paola Cena, MD, Mario Molaschi, MD, AP, and Fabrizio Fabris, MD, FP

Table 3. Variables Independently Predictive of In-Hospital Mortality by Logistic Regression

Variable	Odds Ratio	95% Confidence Interval
Absence of Sarcopenia/Frailty	0.93	0.88-0.99
Activities of daily living (dependence)	2.84	1.71-4.74
Short Portable Mental Status Questionnaire (moderate to severe impairment)	3.98	2.41-6.58
Acute Physiology and Chronic Health Evaluation II score	1.07	1.03-1.12

Frailty and post-operative outcomes in older surgical patients: a systematic review



Lin et al. *BMC Geriatrics* (2016) 16:157

Conclusion

Frailty is consistently found to be associated with adverse outcomes after surgery. In the 23 articles reviewed, the strongest evidence lies in the association with increased 30 day, 90 day and 1 year mortality, post-operative complications and length of stay. This highlights the importance of detecting frailty in peri-operative assessment. The possibility that different frailty tools may be best suited for different acuity and type of surgical patients is worth exploring. The association between frailty and return to pre-morbid function, discharge destination, and quality of life after surgery warrants further research.

Research

Mortality associated with delay in operation after hip fracture: observational study

Alex Bottle, Paul Aylin

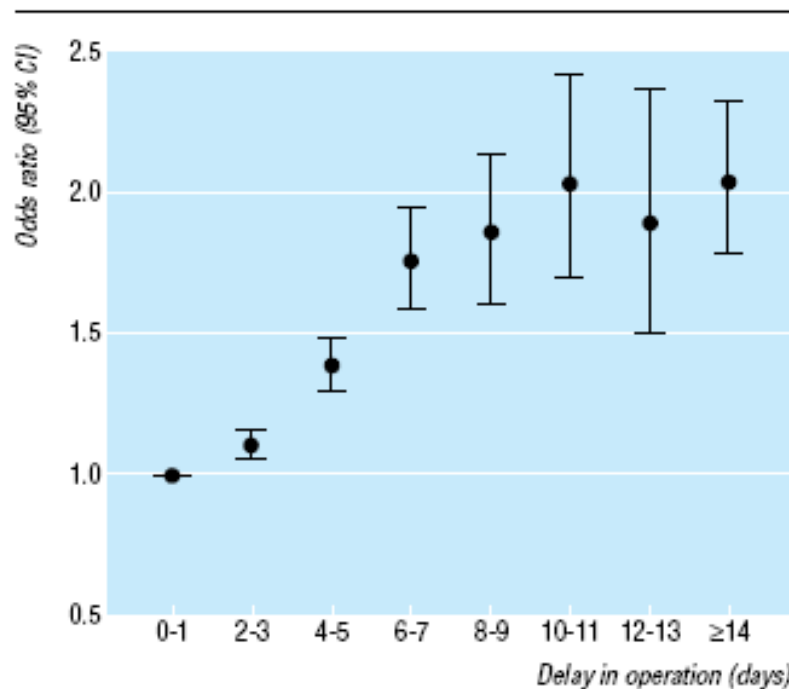


Fig 1 Odds ratios of death within hospital by operative delay relative to at most one day's delay, after adjustment for age, sex, deprivation, type of procedure (fixation and replacement only), and selected comorbidities

Abstract

Objective To estimate the number of deaths and readmissions associated with delay in operation after femoral fracture.

Design Analysis of inpatient hospital episode statistics.

Setting NHS hospital trusts in England with at least 100 admissions for fractured neck of femur during the study period.

Patients People aged ≥ 65 admitted from home with fractured neck of femur and discharged between April 2001 and March 2004.

Main outcome measures In hospital mortality and emergency readmission within 28 days.

What is already known on this topic

Over 60 000 hip fractures occur every year in the UK

There is conflicting evidence from fairly small studies for the association between delay in operation and mortality, though Royal College of Physicians' guidelines recommend that patients be operated on within 24 hours of admission

Operation may be delayed to stabilise concomitant medical conditions

What this study adds

In England, 40% of procedures were performed more than one day after admission

Proportions of patients waiting for more than one day or more than two days for their operation varies widely between trusts

Delay is associated with increased mortality; the association still exists but is reduced after adjustment for confounders

Importance of frailty in patients with cardiovascular disease



European Heart Journal (2014) 35, 1726–1731
doi:10.1093/eurheartj/ehu197

Mandeep Singh^{1*}, Ralph Stewart², and Harvey White²

Table 5 Reasons for evaluating whether frailty is present in patients with cardiovascular diseases

- 1 Population ageing is increasing the number of frail patients with CVD
- 2 Eye ball or end of the bed assessments of frailty may not be reliable
- 3 Frailty increases the risks of cardiac surgery and other cardiovascular interventions
- 4 Frailty increases the risk of cardiovascular and non-cardiovascular mortality and the need for future institutional care
- 5 Frail patients may have more complications from medical treatments
- 6 The benefits of some cardiac interventions may be less in frail elderly patients because of competing risks. Non-cardiac deaths dominate following TAVR, PCI, and CABG

Mortality Risk Along the Frailty Spectrum: Data from the National Health and Nutrition Examination Survey 1999 to 2004

J Am Geriatr Soc 2018.

Table 3. Association Between Frailty and Overall and Cardiovascular Mortality

	Model 1	Model 2	Model 3
Mortality	Hazard Ratio (95% Confidence Interval)		
Overall			
Prefrail	2.40 (2.16–2.67)	1.79 (1.60–2.01)	1.64 (1.45–1.85)
Frail	4.97 (4.34–5.69)	3.89 (3.36–4.51)	2.79 (2.35–3.30)
Cardiovascular			
Prefrail	2.82 (2.28–3.48)	2.07 (1.65–2.60)	1.84 (1.45–2.34)
Frail	3.72 (2.85–4.87)	4.79 (3.61–6.34)	3.39 (2.45–4.70)

E' possibile che almeno parte di questo eccesso di mortalità CV e totale nei soggetti FRAGILI possa essere addebitato al mancato uso degli anticoagulanti orali per la FA o di altri farmaci indicati per il trattamento o la prevenzione della malattie CV in ragione della loro percepita «fragilità»?

FRAILTY

Survival curve estimates according to **FRAILTY** status

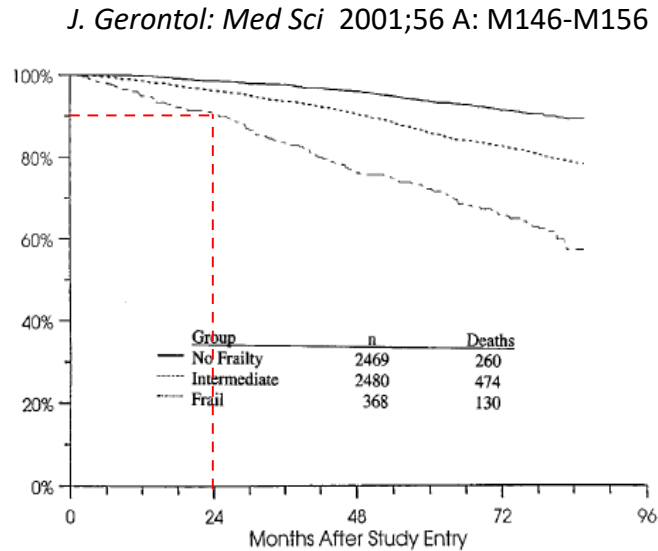
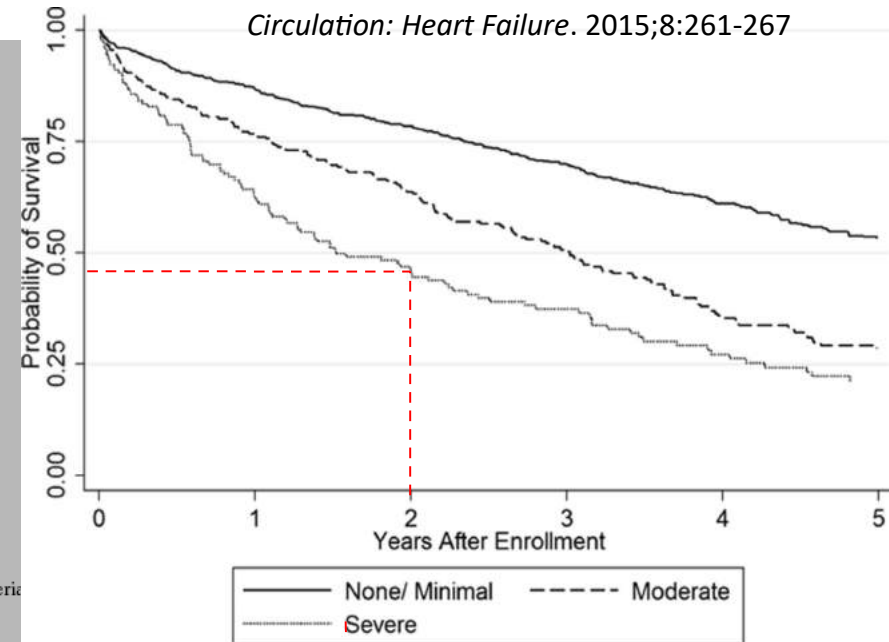


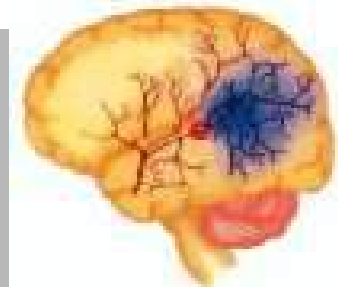
Figure 4. Survival curve estimates (unadjusted) over 72 months of follow-up by frailty status at baseline: Frail (3 or more criteria present); Intermediate (1 or 2 criteria present); Not frail (0 criteria present). (Data are from both cohorts.)

DISABILITY

Time to death in patients with HF according to their level of difficulty with **ADLs** (none/minimal, moderate, severe)



....**fragilità e disabilità** devono essere «pesate» in modo diverso quando si prenda in considerazione una terapia (anticoagulante) volta primariamente a prevenire la **disabilità conseguente ad un ictus cardio-embolico**....





FIT, FULL AUTONOMY,
OAC recommended,
regardless of age



PRE-FRAIL or FRAIL,
preserved AUTONOMY
OAC should be considered



**Severe COMORBIDITY with short
life expectancy, and/or loss of
FUNCTIONAL AUTONOMY**
**Poor expected net clinical
benefit from OAC:**
discourage OAC use



‘Ten Commandments’ of the EHRA Guide for the Use of NOACs in AF

Non-vitamin K antagonist oral anticoagulants (NOACs) are an alternative for vitamin K antagonists (VKAs) to prevent stroke in patients with atrial fibrillation (AF), and have emerged as the preferred choice, particularly in patients newly started on anticoagulation. Both physicians and patients are becoming more accustomed to the use of these drugs in clinical practice. However, many unresolved questions on how to optimally use these agents in specific clinical situations remain. In 2013, the first “EHRA Practical Guide” was published to provide practical guidance for situations; an update was published in 2015. Below are 10 important take-aways from the 2018 EHRA NOAC Practical Guide:

- (1) NOACs can generally be used in patients with **valvular heart disease** except patients with mechanical heart valves or rheumatic mitral stenosis.
- (2) The **EHRA NOAC card** is recommended to be distributed to patients on NOACs at initiation and during follow-up.
- (3) Proper education and patient-tailored approaches (e.g. pill-box; calendar; electronic reminders) should be used to **ensure optimal adherence** to the prescribed NOAC regimen.
- (4) Whenever possible, the tested standard dose of NOACs should be used to provide optimal benefit for the patient. **Dose reduction** of NOACs is primarily guided by the dose reduction criteria used in the large phase III trials.
- (5) Check for possible **drug–drug interactions** in every patient (started) on a NOAC. Explore alternative drugs (NOACs and others) in case of relevant interactions.
- (6) Assess **kidney function** by creatinine and creatinine clearance at regular and prespecified intervals. A possible rule of thumb: minimum interval in months = CrCl/10.
- (7) There is **no need for routine assessment of NOAC plasma levels**. NOAC plasma level measurement may be considered in rare situations, like emergencies (severe bleeding, urgent surgery, and stroke) or complex patient profiles (e.g. multiple relevant drug–drug interactions, severe over-/underweight or reduced kidney function). This should only be done under the guidance of a coagulation expert and acknowledging that hard clinical outcome data do not exist for such a strategy.
- (8) In patients with CAD and AF, use of **NOACs in combination with antiplatelet therapy is feasible (and preferred over VKA)**. Duration of triple therapy should be as short as reasonably possible, depending on the risk for stroke, (athero)thrombosis, and bleeding. A default strategy of 1 week triple therapy after elective stenting and 3 months after stenting during an acute coronary syndrome may be considered as starting point for individualization.
- (9) In selected NOAC treated patients with an acute stroke, **endovascular thrombectomy** is preferred if indicated and possible. **Thrombolysis** can only be administered when no NOAC effect can be assumed (e.g. >48 h after last intake), confirmed by specific coagulation tests.

(10) **Do not undertreat frail and elderly patients.**

THE STORM (acute coronary Syndrome in patients end Of life and Risk assesMent) study

Claudio Moretti,¹ Giorgio Quadri,¹ Fabrizio D'Ascenzo,¹ Maurizio Bertaina,¹ Federico Giusto,¹ Sebastiano Marra,¹ Corrado Moiraghi,² Luca Scaglione,³ Mauro Torchio,³ Giuseppe Montrucchio,² Mario Bo,² Massimo Porta,² Paolo Cavallo Perin,² Carlo Marinone,³ Franco Riccardini,² Javaid Iqbal,⁴ Pierluigi Omedè,¹ Serena Bergerone,¹ Franco Veglio,² Fiorenzo Gaita¹

To cite: Moretti C, Quadri G, D'Ascenzo F, et al. *Emerg Med J* 2016;**33**:10–16.

GENERAL CRITERIA OF END-STAGE ILLNESS

- 1) Weight loss > 10% in last 6 months
- 2) General physical decline
- 3) Serum albumin < 25 g/l
- 4) Reducing performance status (Karnovsky score < 50%)

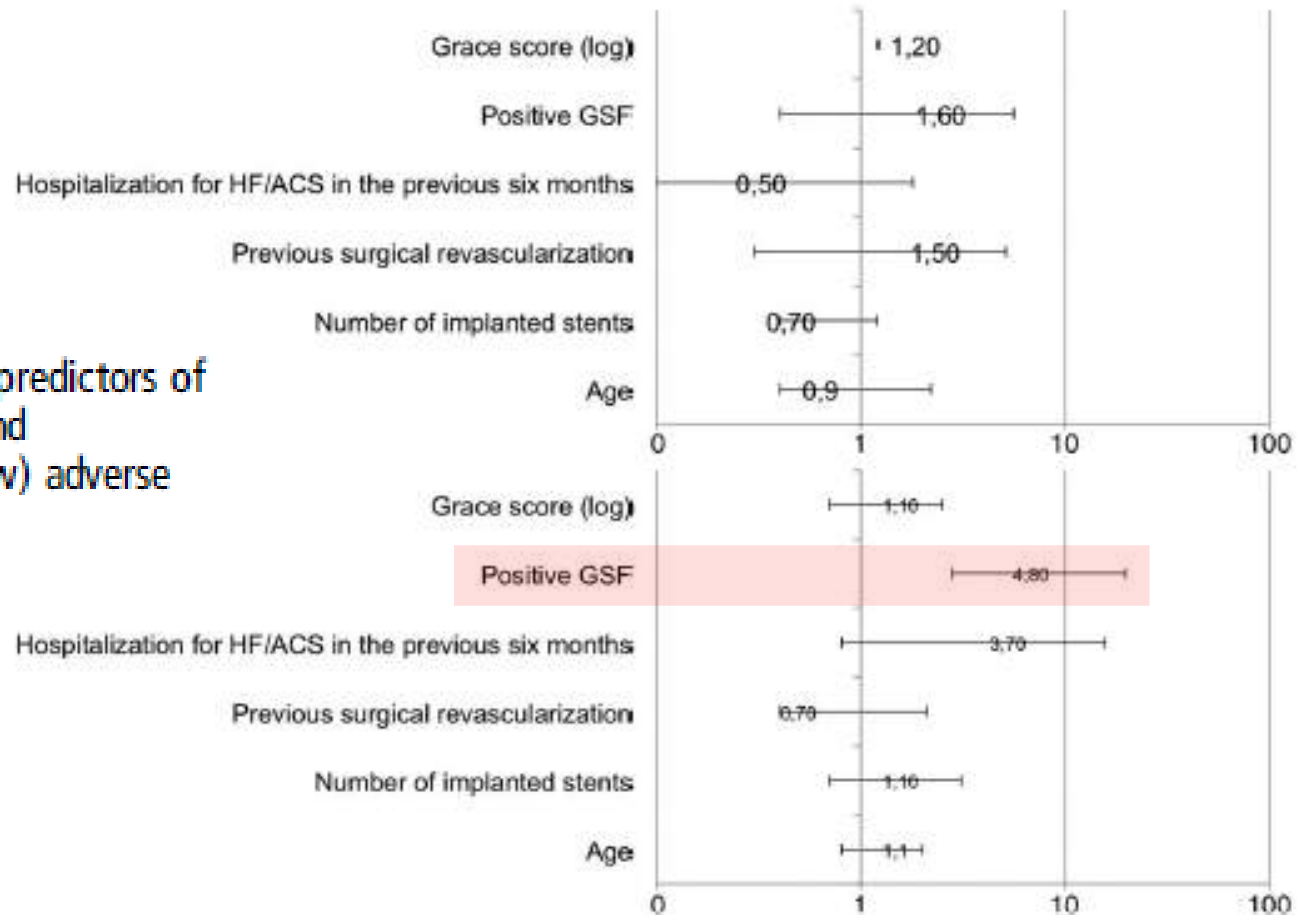


Figure 3 Independent predictors of cardiovascular (above) and non-cardiovascular (below) adverse events at 3 months.

Influence of patients' age at implantation on mortality and defibrillator shocks

Europace (2017) 19, 802–807



Death

ICD Shock >200 b.p.m.

Conclusioni—Gli anziani con defibrillatore hanno maggior mortalità complessiva ma meno scariche antiaritmiche (rispetto ai più giovani). Questi dati suggeriscono un **minor beneficio del defibrillatore negli anziani in ragione di multiple concorrenti cause di morte non aritmica.**

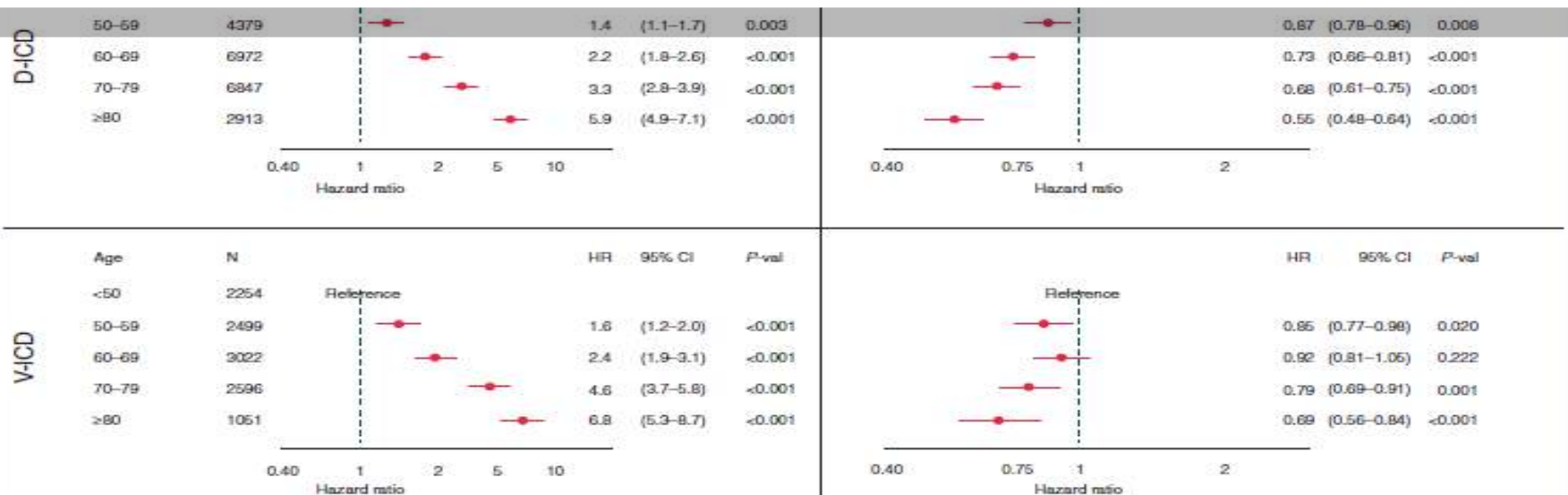


Figure 3 Adjusted hazard ratios for mortality (left panels) and defibrillator shocks (right panels) by age group in single-chamber (lower panels), dual-chamber (middle panel), and CRT (upper panels) defibrillator patients. Patients in the <50 years of age group are used as reference.

Arrhythmia/Electrophysiology

(*Circulation*. 2013;127:2383-2392.)

Survival After Implantable Cardioverter-Defibrillator Implantation in the Elderly

Conclusioni—Gli anziani hanno maggior mortalità complessiva (rispetto ai più giovani) dopo impianto di un defibrillatore, nonostante il numero di scariche appropriate sia simile nelle varie età. **Le decisioni circa l'opportunità di impiantare un defibrillatore non dovrebbero quindi basarsi sull'età soltanto, ma dovrebbero altresì considerare tutte quelle condizioni che predispongono alla morte nonostante il ricorso al defibrillatore.**

Gait Speed and Operative Mortality in Older Adults Following Cardiac Surgery

JAMA Cardiol. 2016;1(3):314-321.

Jonathan Afilalo, MD, MSc; Sunghye Kim, PhD; Sean O'Brien, PhD; J. Matthew Brennan, MD, MPH; Fred H. Edwards, MD; Michael J. Mack, MD; James B. McClurken, MD; Joseph C. Cleveland Jr, MD; Peter K. Smith, MD; David M. Shahian, MD; Karen P. Alexander, MD

Figure 2. Unadjusted Association Between Gait Speed and Operative Mortality

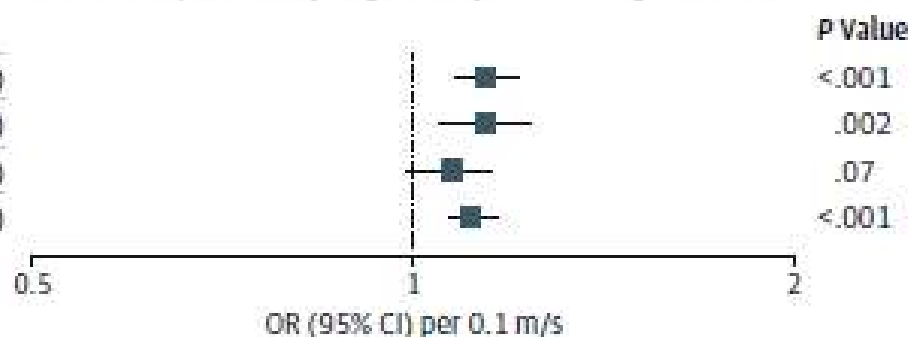


CONCLUSIONS AND RELEVANCE Gait speed is an independent predictor of adverse outcomes after cardiac surgery, with each 0.1-m/s decrease conferring an 11% relative increase in mortality. Gait speed can be used to refine estimates of operative risk, to support decision-making and, since incremental value is modest when used as a sole criterion for frailty, to screen older adults who could benefit from further assessment.

Gait Speed, m/s

Surgery	No.	OR (95% CI) per 0.1 m/s
CABG	9005	1.14 (1.08-1.21)
Valve	3765	1.14 (1.05-1.24)
CABG plus valve	2401	1.07 (0.99-1.15)
All pooled	15 171	1.11 (1.07-1.16)

Effect of Gait Speed After Adjusting for Society of Thoracic Surgeons (STS) Predicted Risk



Clinical Research

Cost of Cardiac Surgery in Frail Compared With Nonfrail Older Adults

Conclusions

Frail older adults undergoing cardiac surgery incur substantially higher hospitalization costs than do their nonfrail counterparts. Our study has added to the emerging body of evidence linking frailty with increased costs in noncardiac surgery and inpatient medical care. Given the expansion of the frail older adult population and their growing need for cardiovascular care, these findings have considerable implications for our constrained health care system. Further research is needed to better allocate resources and contain costs by improving patient selection and pre- and postoperative optimization of frail patients to prevent deleterious and costly health outcomes.

Figure 1. Hospitalization cost by frailty status.

HEART TEAM - VALUTAZIONE MULTIDIMENSIONALE

pazienti ultra 70enni con stenosi aortica severa **candidati a:**

- Sostituzione valvolare chirurgica
- Transcatheter Aortic Valve Implant (TAVI)
- Valvuloplastica

Valutazione Funzionale:

ADL (Activities of Daily Living)

IADL (Instrumental Activities of Daily Living Scale)

Valutazione Cognitiva: SPMSQ (Short Portable Mental Status Questionnaire)

Valutazione Nutrizionale: MNA (Mini Nutritional Assessment)

Fragilità: GREEN SCORE

Indice di Comorbidità: CIRS

Score Prognostico ad 1 anno: MPI (Multidimensional Prognostic index)

ROLE OF COMPREHENSIVE GERIATRIC ASSESSMENT IN ELDERLY PATIENTS WITH SEVERE AORTIC STENOSIS AT LOW-INTERMEDIATE SURGICAL RISK.

Bo M, MD, PhD^a, Bergamo D, MD^a, Calvi E, MD^a, Iacovino M, MD^a, Falcone Y, MD^a, Grisoglio E, MD^a, Filippini C, MD^b, Salizzoni S, MD, PhD^c

submitted

Variables associated with treatment strategy in low-intermediate risk patients

	All (n=138)	TAVI (n=95)	SAVR (n=43)	p- value	Log Reg
Number of drugs \pm SD	6.4 \pm 2.8	6.9 \pm 2.8	5.7 \pm 2.4	0.014	0.0168
Gait speed, mean \pm SD	0.5 \pm 0.3	0.5 \pm 0.3	0.6 \pm 0.3	0.001	0.0019

Short and long-term outcomes in patients treated with TAVI and SAVR, and in the sub-group at low-intermediate risk

	All TAVI (n=109)	All SAVR (n=45)	p-Value	Low-intermediate risk* TAVI (n=95)	Low-intermediate risk* SAVR (n=43)	p-Value
30-day mortality, n (%)	6 (5.5%)	1 (2.2%)	0.3754	1 (3.1%)	-	0.4349
One-year mortality, n (%)	18 (16.5%)	6 (13.3%)	0.623	4 (12.5%)	3 (15%)	0.862

Nella sua accezione «geriatrica» comune la **FRAGILITA'** è una sindrome biologica caratterizzata da ridotta massa e forza muscolare, scarsa attività e resistenza fisica, lentezza e difficoltà nei movimenti e facile esauribilità fisica, associata ad un maggior rischio di invecchiamento sfavorevole, progressiva disabilità e, nel lungo termine dipendenza ed istituzionalizzazione.

La valutazione della **FRAGILITA'** nell'ambito della **Valutazione Geriatrica Multidimensionale (VGM)** fornisce **informazioni prognostiche aggiuntive sui pazienti anziani in diversi settings clinici specialistici**. Pertanto, nell'attuale contesto clinico trasversalmente dominato da un crescente numero di pazienti anziani, la VGM rappresenta un momento indispensabile nella valutazione del paziente per ottimizzare i percorsi procedurali in diversi ambiti specialistici, evitando la futilità terapeutica e tentando di fornire il miglior beneficio clinico al paziente. Le **competenze geriatriche** sono cruciali nell'interazione con gli altri specialisti per una corretta ed attendibile valutazione multidisciplinare del paziente anziano e per una corretta gestione delle terapie e delle procedure. Non è più tempo di valutazioni «eye-ball» dell'anziano e della fragilità.

La **FRAGILITA'** non deve essere confusa con la **DISABILITA'**, e non è necessariamente associata o dipendente dalle malattie, potendo anche semplicemente essere il risultato di un contesto ambientale e di stili di vita sfavorevoli in soggetti predisposti. Come tale, la **FRAGILITA' non si cura con le medicine**.

Esistono alcuni dati incoraggianti circa la possibilità di prevenire/rallentare la storia naturale della FRAGILITA' e, soprattutto, la successiva evoluzione progressiva verso la disabilità e la perdita di autonomia, per lo più attraverso interventi integrati nutrizionali, fisici e cognitivi.



La TAO nell'anziano con FA, prima dei NAO

Di Pasquale G, Int J Cardiol 2013

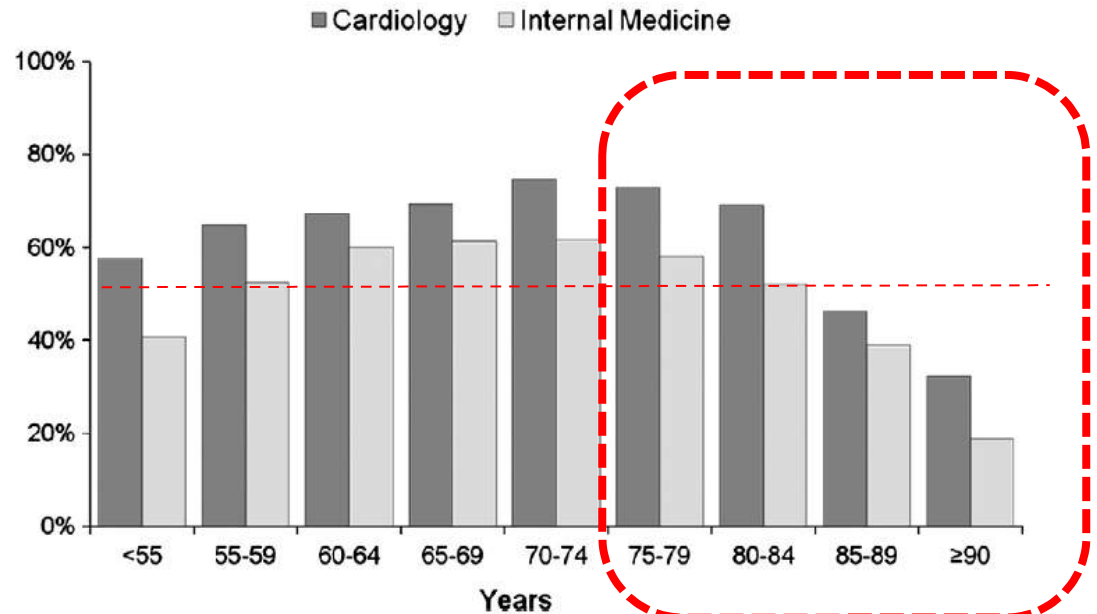


Fig. 5. OAC prescription at discharge from cardiology and internal medicine patients according to the age.

Health status, geriatric syndromes and prescription of oral anticoagulant therapy in elderly medical in-patients with atrial fibrillation: a prospective observational study

International Journal of Cardiology 187 (2015) 123–125



M. Bo^a, F. Li Puma^a, M. Badinella Martini^a, Y. Falcone^{a,*}, M. Iacovino^a, E. Grisoglio^a, M. Bonetto^a, G. Isaia^b, G. Ciccone^a, G.C. Isaia^a, F. Gaita^c

Advanced age, very short life expectancy, difficult or impossible management of therapy, perceived fear of bleeding and harm greater than benefit were the most common reasons why physicians withhold OAs.

Health status, geriatric syndromes and prescription of oral anticoagulant therapy in elderly medical inpatients with atrial fibrillation

Geriatr Gerontol Int 2017; 17: 416–423

Mario Bo,¹ Irene Sciarrillo,¹ Guido Maggiani,¹ Yolanda Falcone,¹ Marina Iacovino,¹ Enrica Grisoglio,¹ Gianfranco Fonte,¹ Simon Grosjean¹ and Fiorenzo Gaita²

Studio retrospettico su **1078** pazienti con FA dimessi 2010-2013 (**83.4** anni, 60.3% femmine); 26.8% dipendenti ADL, 37.3% dipendenti IADL, cognitive impairment in 56.2%; CHA₂DS₂-VASc medio 4.8; HAS-BLED medio 2.1

	Patients without contraindications to VKA	OR	95% CI	Contraindications (patients)
Oral anticoagulant Single- or double Oral anticoagulant None, <i>n</i> (%)	Discharge in medium-/long-term facilities	0.4181	0.20–0.87	
Other, <i>n</i> (%)	Permanent/persistent AF	7.1269	4.02–12.63	
	Hemoglobin	1.2229	1.08–1.39	
	ADL score	1.6603	1.18–2.33	
	Age	0.9223	0.89–0.96	
	No. drugs at discharge	1.1824	1.07–1.31	
	CHA ₂ DS ₂ -VASc score	1.7966	1.47–2.20	

Table 4 Variables associated with prescription of oral anticoagulants (vitamin K antagonists) at discharge: multivariate analysis

Predicting changes in physical performance in a high-functioning elderly cohort:

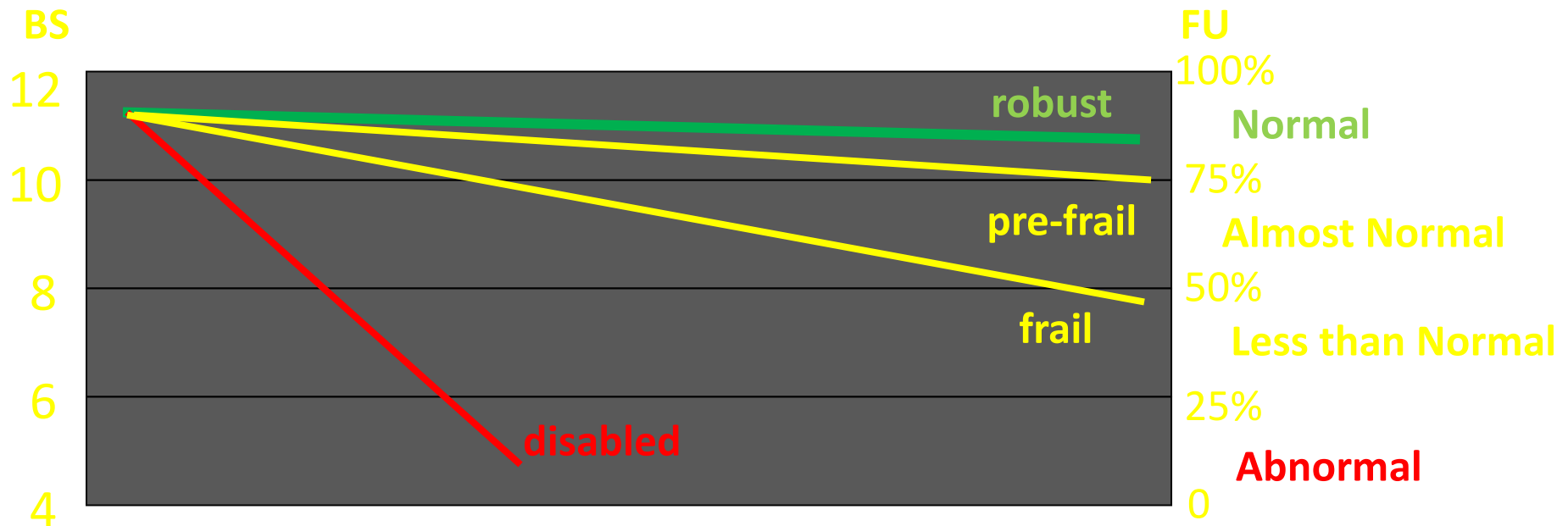
MacArthur studies of successful aging.

Guralnik JM

et al J Gerontol 1994, Mar; 49(2):M85-94

PERFORMANCE SCORE IN THE OLDEST OLD

CHAIR STANDING (score 0-4) + STANDING BALANCE (score 0-4) + TIMED WALKING (score 0-4)



Declines in physical performance within a high-functioning cohort are **predictable** from **sociodemographic and health status** characteristics. The patterns of both decline and improvement in performance observed in this cohort suggest that **older age is not uniformly associated with declines, indicating the potential for effective interventions to promote more successful aging**