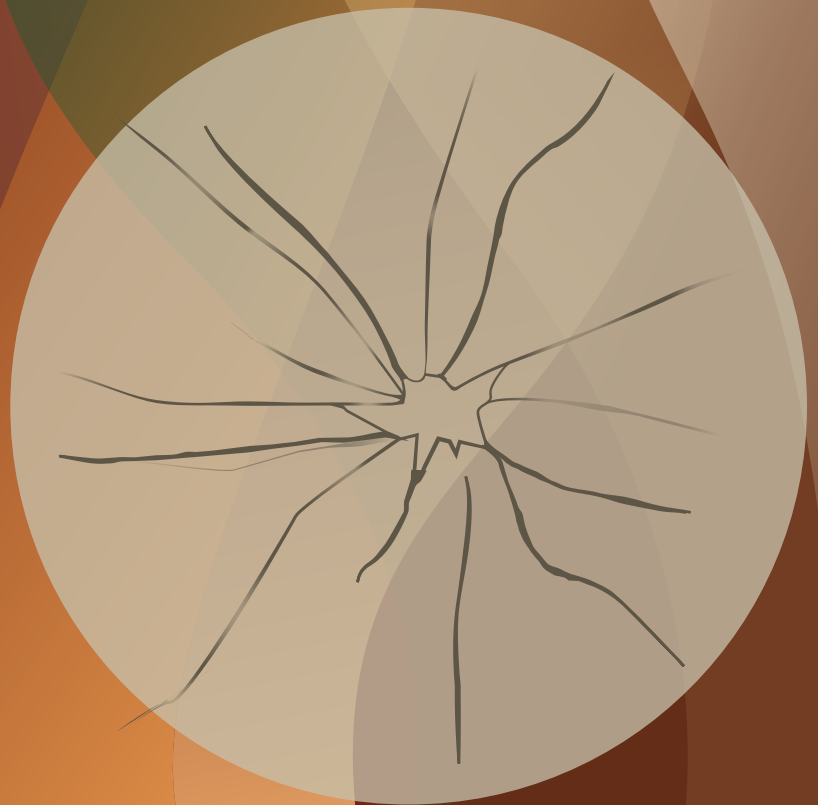


Basis for the identification of and care for **frail older people in Catalonia**



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Executive summary

What is the purpose of this consensus?

- The primary goal of this document is to **establish a conceptual foundation** for identifying and caring for frail older adults, serving as a **starting point for designing and implementing** a tailored care process for this group in Catalonia. This aims to provide the most effective response to their needs.
- To achieve this, **agreement has been reached** on the definition of frailty, the impact of this condition on both the population and the healthcare system has been evaluated, and evidence has been reviewed concerning tools for identifying frail individuals as well as the effectiveness and efficiency of interventions.

Why does this matter?

- Frailty, —especially given the growing longevity of the population— represents **one of the key challenges** Catalonia will face in the years ahead.
- The concept of frailty **provides a spectrum** —from no frailty to severe frailty— that enables the **development of targeted strategies** for its prevention and management.
- This importance is underscored by its foundation in **robust scientific evidence** and a multidisciplinary **consensus** involving **15 scientific societies** with expertise in frailty, alongside a metaforum that includes input from **citizens** and **healthcare professionals**.

What are the five key questions this addresses?

1. **How do we define frailty?** Frailty is a state of increased vulnerability, typically age-related, that heightens the risk of negative health outcomes such as hospitalization, disability, or death. It is a dynamic condition that can potentially be altered with the right interventions.
2. **How common is frailty in Catalonia?** In Catalonia, approximately 18% of individuals over 65 are affected by frailty, with higher rates among women and older adults. This figure rises with age, surpassing 25% in those over 85.
3. **How does frailty affect individuals' health and the healthcare system?** Frail individuals face elevated risks of death, disability, hospitalization, and institutionalization. The healthcare costs for frail people are three to four times greater than those for non-frail individuals.

4. Which tools are suggested for identifying and evaluating frail individuals?

- *Several instruments exist for identifying and screening frail individuals* at a population level. For Catalonia, the G rontop le Frailty Screening Tool (GFST) is recommended, potentially paired with the Short Physical Performance Battery (SPPB) for additional assessment.
- *To measure the extent of frailty, perform situational diagnoses, and ensure frailty safety diagnoses*, the most evidence-supported tools —ranked from strongest to weakest evidence— are the Comprehensive Geriatric Assessment (CGA), Frailty Indices (FI), and Clinical Frailty Scales (CFS).

5. What interventions are advised to tackle frailty?

- *For primary and secondary prevention of frailty (targeting pre-frail individuals or those with early frailty), the most evidence-backed interventions are* group physical exercise programmes, supplemented as needed by nutritional, cognitive, and social support measures. Reviewing medications and addressing geriatric syndromes also prove beneficial.
- *For individuals with moderate to advanced frailty and/or complex chronic conditions (CCP/ACP), individualized interventions, along with tertiary and quaternary prevention strategies, are critical, as outlined in greater detail in document "[Catalan model of care for people with frailty, complex chronic \(CCP\) and advanced chronic \(ACP\) conditions](#)".*

What comes next?

This document serves as the **initial step toward consensus**, paving the way for further actions:

- For the general population, a roadmap will be developed to focus on the primary prevention of frailty, prioritizing **healthy ageing** policies and empowering individuals.
- A **programme targeting pre-frailty and early frailty** will be designed and implemented, with a strong emphasis on secondary prevention.
- For those with **moderate to advanced frailty and/or complex chronic conditions (CCP/ACP)**, efforts will continue to advance individualized care, tertiary and quaternary prevention, and a coordinated care response from the Health and Social Services systems, adopting an integrated approach.

1. Introduction

1.1 Rationale, context, objectives, and drivers of the consensus

1.1.1 Rationale and context

We are witnessing the epidemiological rise of a growing population of older adults, many of whom enjoy good health, while others experience chronic conditions and varying levels of frailty. This demographic shift poses one of the most significant challenges for society, as well as for health and social service systems, both now and moving forward: The challenge affects organizations and policymakers—due to the complexities of meeting diverse needs and managing the potential costs of care—as well as professionals, who must adopt a highly individualized approach tailored to the specific needs of this population.

As part of the [Global Strategy on Ageing and Health \(2016-2020\)](#)¹, the **World Health Organization (WHO)** laid the groundwork with key publications: the 2015 [World Report on Ageing and Health](#)², which provided a framework for understanding ageing and health, and the 2017 [Global Strategy and Action Plan on Ageing and Health](#)³, which emphasized promoting healthy ageing and adapting health systems to better serve older adults and those with chronic conditions. Building on this momentum, in December 2020, the **United Nations** General Assembly designated 2021-2030 as the [Decade of Healthy Ageing](#), underscoring the global commitment to these goals.

To support this effort, the World Health Organization (WHO) has developed the [Global Strategy on Integrated People-Centred Health Services \(2016-2026\)](#)⁴, which highlights the importance of placing individuals at the core of healthcare, reducing service fragmentation, and fostering collaboration among providers. **Firstly**, it prioritizes shifting the focus of health systems to people and communities—away from diseases—empowering them to actively manage their own health rather than remaining passive recipients of care. This requires delivering services from the perspective of individuals, families, and communities—viewed as both participants and beneficiaries—and ensuring they receive the education and support necessary to make informed decisions and engage in their own care. **Secondly**, the strategy calls for a fundamental shift in the healthcare system’s organizational model, moving away from a disease-centred approach toward one that prioritizes the needs and health outcomes most valued by individuals. **Thirdly**, it stresses

the need to ensure people have access to a seamless continuum of services—including health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation, and palliative care—tailored to their needs across different levels of the health system and throughout their lifespan.

Lastly, the **European Union** emphasizes the promotion of active ageing across the lifespan within its Health 2020 strategy. As part of the EU's Third Health Programme (2014-2020), the ADVANTAGE Joint Action⁵ was launched—the first collaborative initiative focused on frailty, involving 22 member states and 38 organizations. Its goal was to establish a unified European strategy to address frailty through a consistent approach to prevention, detection, assessment, and management, ultimately fostering healthy ageing. A key outcome of the ADVANTAGE Joint Action is the Frailty Prevention Approach (FPA)⁶ document, which synthesizes findings from extensive literature reviews and provides clear, actionable recommendations. These guidelines address frailty not only in terms of prevention but also through effective detection and treatment, aiming for a standardized and impactful application across Europe.

In **Catalonia**, the [Catalan Health Plan 2021-2025](#)⁷ explicitly commits to promoting healthy ageing, enhancing the autonomy of older adults, and integrating care, with a particular focus on tailoring services to the needs of frail individuals—as detailed in the document [Catalan model of care for people with frailty, complex chronic \(CCP\) and advanced chronic \(ACP\) condition](#)—. The [Promotion of Autonomy and Care for People with Long-Term Support in the Community Environment in Catalonia](#), also issued by the Department of Social Rights, underscores a proactive approach to preventing disability and frailty. **At the national level**, the [Consensus Document on the Prevention of Frailty in the Elderly](#)⁸, published in 2022, stands out as a significant contribution to these efforts.

This document adopts a comprehensive framework centred on frailty in its widest sense: The concept of **frailty serves as a valuable opportunity** for professionals and health and social service systems to **weave** a cohesive, harmonized response that spans prevention to end-of-life care. This response is tailored to individual needs, interdisciplinary, intersectoral, and fully integrated^{9,10}.

1.1.2 Objectives of the document

Within this framework, the document pursues several objectives: first, it aims to clarify the terminology and concepts surrounding frailty, drawing on professional expertise and a review of existing evidence (**Chapter 1**). Second, it examines the impact of frailty on both individuals and systems—highlighting its epidemiological significance—(**Chapter 2**).

Chapters 3 and 4, respectively, provide a practical foundation for identifying and diagnosing frail individuals, as well as outlining individualized approaches and systemic planning strategies, grounded in the latest evidence.

In the Appendices section, **Appendix 1** stands out as particularly significant. It outlines the conclusions of a metaforum organized by the UAB's Health and Ageing Foundation as part of a working group on frailty. This forum leverages the perspectives of both affected individuals and expert professionals to pinpoint critical aspects —such as expectations, preferences, barriers, and proposals— related to frailty. These insights serve as a foundation for shaping future strategies aimed at preventing and addressing frailty among older adults in Catalonia.

1.1.3 Consensus participants

Institutionally, this initiative is co-led by the Department of Health (specifically the General Directorate of Health Planning and Research and the Public Health Agency of Catalonia) and the Department of Social Rights, within the framework of Integrated Social and Health Care (AISS).

The proposal has been reviewed with input from the following 15 scientific societies and professional associations, listed alphabetically:

- Association of Family and Community Nursing of Catalonia (AIFiCC)
- College of Dieticians-Nutritionists of Catalonia (CoDiNuCat)
- Catalan Society of Clinical Pharmacy (SCFC)
- College of Occupational Therapists of Catalonia (COTOC)
- Official College of Social Work of Catalonia (TSCAT)
- Catalan-Balearic Society for Palliative Care (SCBCP)
- Catalan Society of Endocrinology and Nutrition (SCEN)
- Catalan Society of Clinical Pharmacy (SCFC)
- Catalan-Balearic Society of Nursing (SCBI)
- Catalan-Balearic Society of Physiotherapy (SCBF)
- Catalan Society of Geriatrics and Gerontology (SCGiG)
- Catalan Society of Emergency Medicine (SOCMUE)
- Catalan Society of Family and Community Medicine (CAMFIC)
- Catalan-Balearic Society of Internal Medicine (SCMI)
- Catalan-Balearic Society of General Health Psychology (SCBPGS)

1.2 Frailty: definition and general characteristics

It is frequently observed that individuals of the same age, facing identical health challenges and receiving comparable care, exhibit varying health outcomes: some experience minimal functional decline—and easily return to their baseline state—, while others suffer significant, often irreversible functional deterioration (see Figure 1). This differing vulnerability to adverse health outcomes—including mortality—is shaped by each individual's level of **frailty**¹¹.

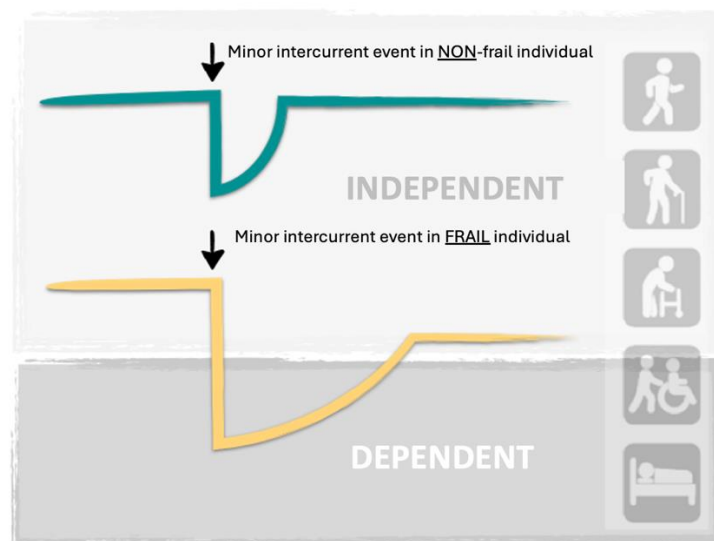


Figure 1. Vulnerability in frail individuals to minor intercurrent events. The green line depicts a non-frail person who, after a minor stressor, undergoes a slight functional decline and subsequently recovers to their original state. In contrast, the yellow line illustrates a frail individual who, when confronted with a similar event, experiences a more pronounced decline and fails to fully return to their prior condition. Adapted from Clegg A et al.¹¹

1.2.1 Definition of frailty

While no universal definition of frailty exists, there is broad agreement that it represents a state of heightened vulnerability to stressors, stemming from diminished compensatory mechanisms. Though this state can evolve over time and may be modifiable, it significantly elevates an individual's risk of adverse events and unfavourable health outcomes¹².

The World Health Organization (WHO) offers the most recent definition, describing frailty as a "progressive age-related decline in physiological systems that leads to a reduction in reserves of intrinsic capacity, heightening vulnerability to stressors and increasing the likelihood of adverse health outcomes²."

1.2.2 Physiopathological bases of frailty

This "homeostatic limitation" arises from the accumulation of numerous minor dysfunctions across multiple levels¹³:

- **At the molecular level**, cellular aging is marked by cellular and molecular damage due to inadequate repair mechanisms overwhelmed by aggressive processes. These processes are shaped by a mix of genetic and environmental factors, alongside epigenetic mechanisms —those regulating differential gene expression in cells— which together elevate oxidative stress and foster a state of chronic inflammation, often termed "inflammaging." Key markers associated with inflammation and frailty include interleukin-6, C-reactive protein, and tumour necrosis factor α (TNF α). To counteract this, the body activates anti-inflammatory cytokines (such as interleukins 4, 10, and 13) and increases cortisol production, which, while compensatory, triggers adverse effects like bone resorption and immune dysfunction. Consequently, this interplay of inflammatory and anti-inflammatory responses disrupts homeostasis at a higher level: the tissue and organ systems.
- **At the tissue/organ level**: The inflammatory environment ultimately disrupts the regulation of the immune and endocrine systems —central to the onset of frailty—, as well as organ function (e.g., kidney failure) and tissue integrity (e.g., the development of osteoporosis or sarcopenia —a syndrome marked by progressive, generalized loss of skeletal muscle mass and strength—).
- **At a global/macrosopic level**: These underlying processes result in clinically observable changes, often characterized by the accumulation of deficits across multiple domains:
 - *Functionality*: Manifesting as gait instability, falls, reliance on assistance for new daily activities, or other restrictions in a person's occupational capabilities.
 - *Cognitively*: Evident through impairments in planning, recent memory, or the onset of delirium, for instance.
 - *Nutritionally*: Seen in conditions like anorexia or malnutrition, which lead to common secondary issues: such as sarcopenia, pressure ulcers, or infections.
 - *Across other domains*: Including the emergence of additional geriatric syndromes or challenges in social or sensory functioning, for example.

1.2.3 Variables and conditions associated with frailty

Frailty is influenced by a wide array of variables that simultaneously act as both causes and consequences of their interplay. A recurring challenge in studying frailty is: determining whether certain factors —such as malnutrition— are outcomes of frailty or predisposing contributors to its development.

- **Malnutrition and frailty:** evidence suggests a bidirectional relationship. The two often share a similar phenotypic expression, likely rooted in a common pathophysiological foundation^{14,15}. Studies show that frail individuals exhibit higher rates of malnutrition compared to their non-frail counterparts, with malnutrition also serving as an independent risk factor for frailty¹⁶.
- **Cognitive impairment and frailty:** Growing evidence suggests that cognitive function assessments should be integrated into frailty evaluations¹⁷. Individuals with dementia —particularly those with a geriatric profile— tend to exhibit higher levels of frailty¹⁸. Conversely, frail individuals face an elevated risk of cognitive impairment —likely due to shared underlying pathophysiological mechanisms—¹⁹.
- **Depressive syndrome and frailty:** numerous risk factors, consequences —and symptoms— are shared by frailty and depressive syndrome. There are multiple studies confirming a bidirectional relationship between the two²⁰, especially pronounced in end-of-life patients^{20–22}.
- **Geriatric syndromes, symptoms and frailty:** A strong link exists between geriatric syndromes and frailty —to the extent that the presence of such syndromes may serve as an indirect marker of frailty—²³. Specific conditions —including falls, delirium, polypharmacy, dysphagia, and ulcers— show a particularly robust association with frailty^{24–31}. Additionally, frailty has been linked to certain symptoms, such as pain³².
- **Social vulnerability and frailty:** Social factors play a critical role in understanding frailty among older adults. Individuals with heightened social vulnerability exhibit a higher prevalence and incidence of disability compared to those without social challenges³³. The social dimensions of frailty encompass individual and relational factors, physical and environmental conditions, and economic circumstances^{34–37}. Key observations include:
 - Poor socialization and loneliness adversely affect physical and cognitive functioning.
 - Frailty levels in a population are closely tied to economic status: in wealthier countries, frailty prevalence is lower, and frail individuals tend to live longer with less disability.
 - A strong connection exists between loneliness, frailty, and the risk of disability.

- Frailty is also associated with a lack of social support.
- **Frailty and multimorbidity:** Alongside multimorbidity –defined as the simultaneous presence of two or more chronic diseases–, frailty ranks among the most common chronic conditions^{38,39}. While distinct, these two states are interrelated: most frail individuals also have multimorbidity, yet only a small proportion of those with multimorbidity are frail (see Figure 2)^{40,41}.

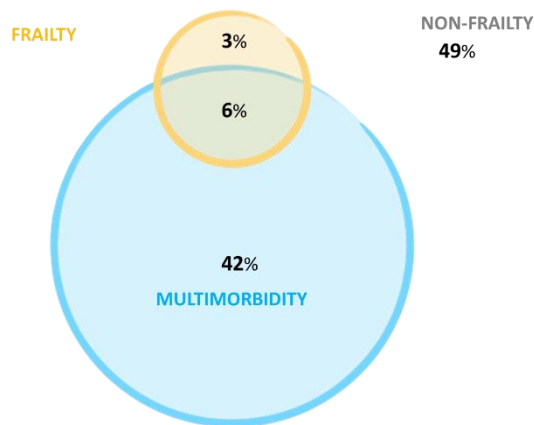


Figure 2. Epidemiological relationship between frailty and multimorbidity.

Adapted from Vetrano DL et al.⁴⁰

- **Disability and dependence:** A well-established connection also exists between frailty, multimorbidity, and the outcomes of disability and dependence. Notably, frailty stands out as the primary independent predictor of mortality and disability in older adults –surpassing the impact of multimorbidity alone– (Figure 3)⁴². Clear correlations are observed between advancing age, loss of autonomy, and disability.

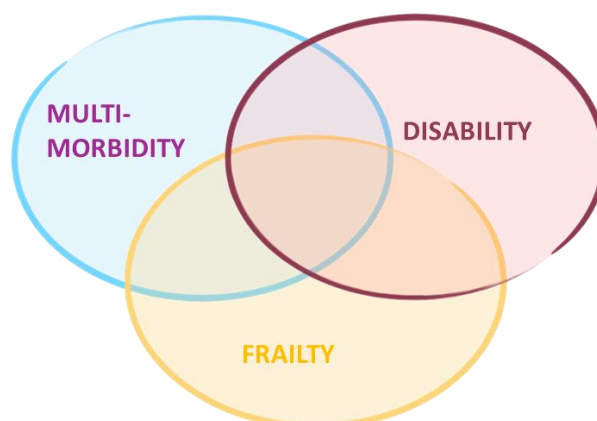


Figure 3. Overlap between the concepts of frailty, multimorbidity, and disability.

Adapted from Fired L et al.⁴²

- **Complex chronicity (CCP) and advanced chronicity (ACP)**

While terms like frailty, multimorbidity, complexity, CCP (Complex Chronicity), and ACP (Advanced Chronicity) are frequently interconnected –and are already embedded in the daily experiences of professionals in Catalonia–, they are neither synonymous nor mutually exclusive.

From the individual's perspective, considering their vulnerability, there exists a spectrum ranging from robust health to advanced frailty. **From a systemic viewpoint**, this continuum spans from a healthy state to potential classification as ACP (Advanced Chronicity), passing through various stages of chronicity with differing degrees of complexity. Complexity typically arises from challenges in addressing people's needs, whether these stem from the individual, their environment, or the system itself (see Figure 4)⁴³.

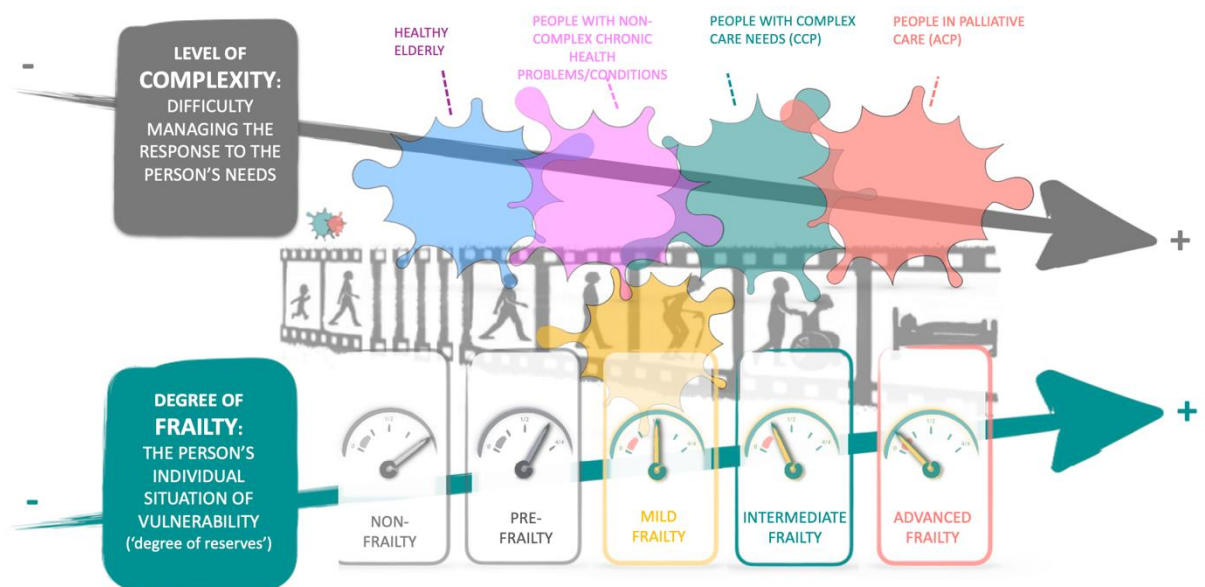


Figure 4. Continuum of frailty and complexity. Adapted from Limon E. et al.⁴³

1.2.4 Frailty as a dynamic reality

Frailty is not a fixed condition; rather, individuals frequently experience shifts in their frailty status. At a population level, these shifts reveal distinct trajectories:

- **Transitions between states of frailty:** Over the course of a lifetime, people move between states of non-frailty and frailty, as well as across varying degrees of frailty (see Figure 5)⁴⁴.

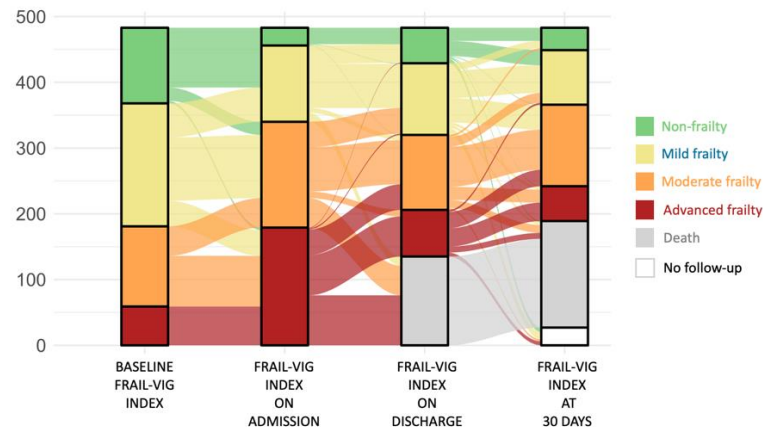


Figure 5. Transitions between different degrees of frailty in a cohort of frail individuals during admission to an intermediate care facility. Adapted from Amblàs-Novellas et al.⁴⁵

This dynamic nature is particularly significant, as it underscores the value of care interventions designed to reverse frailty or, at a minimum, to slow the progression toward greater frailty.

- **Frailty trajectories:** The dynamic nature of frailty allows for the mapping of frailty trajectories, offering professionals and individuals valuable insights into health outcomes and their progression.

An illustrative model of frailty trajectories is outlined by the World Health Organization (WHO) in the [World Report on Ageing and Health](#) 2015. This model presents three hypothetical trajectories (see Figure 6)⁴⁶:

- Optimal trajectory:* A robust health reserve is maintained until late in life, with only a brief period of frailty before death.
- Interrupted trajectory:* A specific event triggers an increase in frailty, followed by partial recovery.
- Deteriorating trajectory:* Frailty progressively accumulates over time until death.

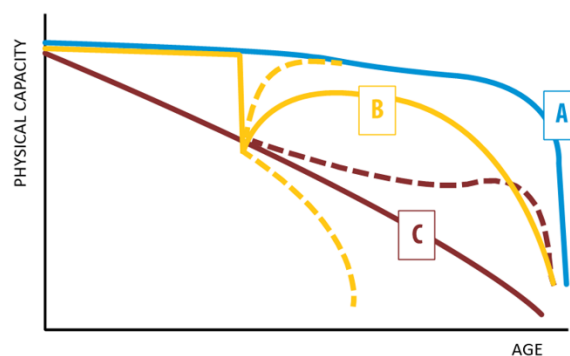


Figure 6. Three trajectories of frailty described by the WHO. Adapted from the World report on ageing and health (2015)⁴⁶.

1.3 Conceptual models of frailty: syndromic view vs. accumulation of deficits

Two primary models currently exist for defining and applying the concept of frailty:

- The first views **frailty as a syndrome** (the phenotypic model, proposed by Dr. Linda Fried⁴⁷)
- while the second frames it as **an accumulation of deficits** or health issues (developed by Dr. Kenneth Rockwood⁴⁸).

1.3.1 Frailty as a syndrome: Fried's phenotypic approach

Though the term "frail older" had been in use since the late 20th century, the modern understanding of frailty was significantly advanced by Linda Fried in 2001. Through a secondary analysis of the Cardiovascular Health Study (CHS), Fried characterized physical frailty as a pre-disability state with a shared pathophysiological basis (see Figure 7). She identified it in individuals exhibiting at least three of the following traits⁴⁹:

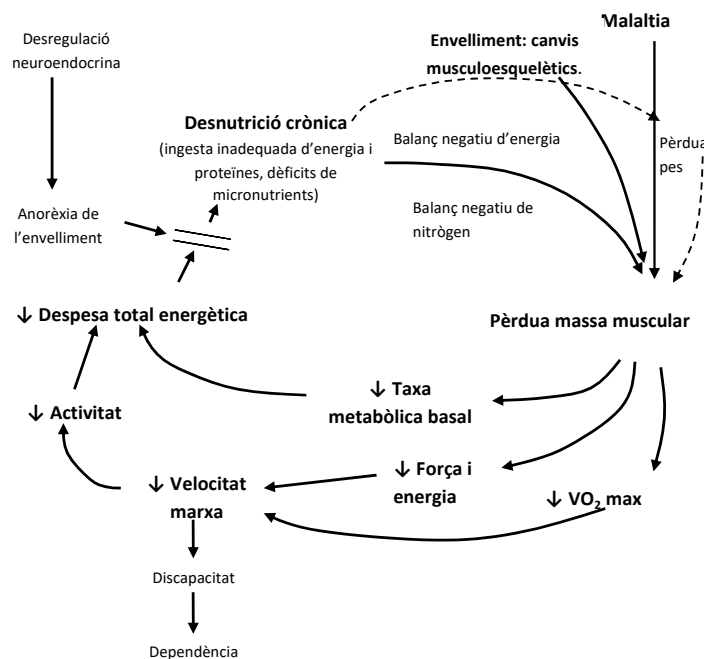


Figure 7. Pathophysiological processes underlying the frailty phenotype.

Adapted from Fried LP, et al.⁴⁹

- **Unintentional weight loss** in the last year (more than 4.5 kg or 5% of usual weight).
- **Tiredness**, assessed by two questions from the CES-D depression scale.

- **Low physical activity** (energy expenditure <383 kcal per week in men or <270 in women), according to the short version of the MLTAQ (Minnesota Leisure Time Activity Questionnaire).
- **Slow gait speed** (adjusted for sex and height).
- **Loss of handgrip strength** (adjusted for sex and body mass index).

Depending on the score obtained, people can be classified as: **robust** (0 points), **pre-frail** (1 or 2 points) or **frail** (3 or more points).

1.3.2 Frailty as an accumulation of deficits

An alternative perspective, put forward by Kenneth Rockwood and colleagues, views **frailty as a continuous spectrum**, ranging from non-frailty to advanced frailty. In this model, frailty intensifies as individuals accumulate health problems or deficits. The greater the number of deficits, the more vulnerable a person becomes, with evidence suggesting that the risk of mortality rises exponentially with both the quantity of deficits and the rate of their accumulation (see Figure 8)⁵⁰.

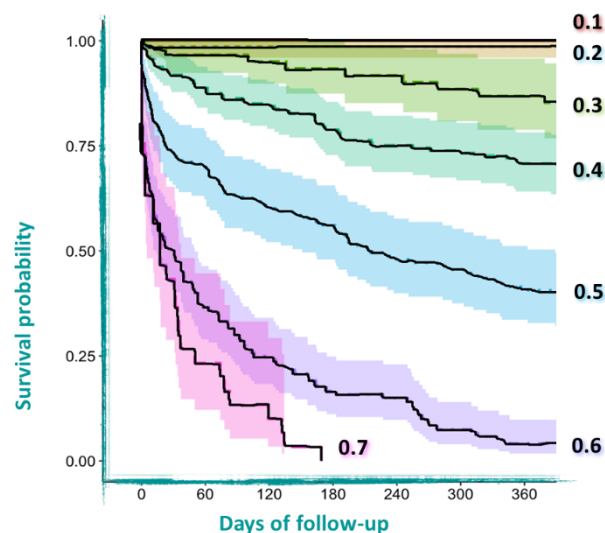


Figure 8. Survival in relation to degree of frailty: the higher the frailty index, the lower the survival rate. Adapted from Amblàs-Novellas et al.⁵¹.

Frailty indices (FI) provide a method to gauge an individual's biological age, which may not always align with their chronological age. The concept is straightforward: at birth, individuals start with a "full tank of health," which gradually depletes as deficits accumulate⁵². These deficits —encompassing illnesses, geriatric syndromes, signs, symptoms, lab results, or functional and cognitive impairments— form the basis for calculating an FI. The FI is derived by dividing the number of accumulated deficits by the

total number of potentially accumulable deficits for a given person (see Figure 9). For example, if someone has 25 deficits out of a possible 50, their FI would be 0.5⁵³.

$$\text{FRAILITY INDEX} = \frac{\text{No. of deficits already accumulated}}{\text{Total no. of accumulable deficits}}$$

Figure 9. Formula for calculating the frailty index. *Source: Own elaboration*

There is widespread agreement that an FI of 0.2^{42,54,55} or higher indicates frailty. An FI of 0.7 represents the maximum threshold of viability —the point at which a person’s homeostasis can no longer tolerate additional deficits, marking the boundary beyond which survival is unsustainable (see Figure 10)^{56–58}.

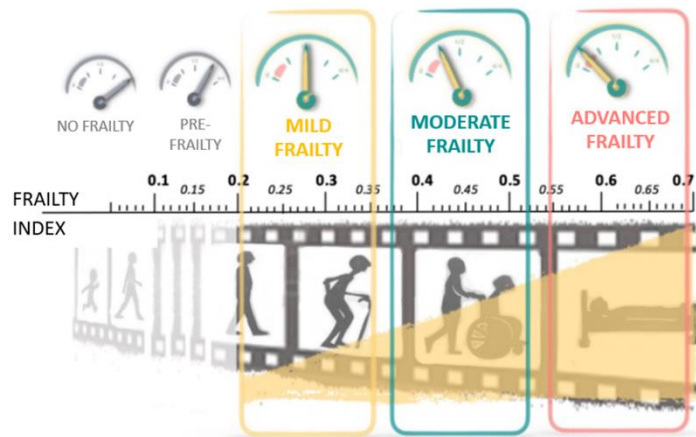


Figure 10. Frailty index and diagnosis of the situation. *Source: Own elaboration*

1.3.3 Frailty as a continuum

These distinct models highlight the **expansive nature of frailty**, spanning from pre-disability states to end-of-life scenarios. Notably, both approaches demonstrate significant overlap in identifying frailty and exhibit strong statistical alignment. Rather than viewing the syndromic-dichotomous (Fried’s phenotypic model) and deficit accumulation-continuous (Rockwood’s Frailty Index) frameworks as contradictory, they can be considered highly **complementary** (see Table 1)⁵⁹.

SYNDROMIC VIEW (Phenotype of Frailty/Fried Criteria)	ACCUMULATION OF DEFICITS (Frailty Index)
Focuses on signs and symptoms	Encompasses diseases, activities of daily living, and clinical assessment results
Detectable prior to clinical assessment	Requires clinical assessment for evaluation
Categorical approach	Continuous scale approach
Based on predefined criteria	Uses unspecified criteria
Views frailty as a pre-disability syndrome	Views frailty as an accumulation of deficits
Tailored for non-disabled older individuals	Applicable to any individual, regardless of functional status or age

Table 1. Main characteristics of the frailty phenotype and the frailty index. Adapted from Cesari et al.⁵⁹.

1.4 Other concepts related to frailty

In recent years, several concepts linked to frailty have emerged –some quite new–. This section provides a brief overview to help place them in context.

1.4.1 Sarcopenia

Sarcopenia is characterized as the progressive decline in muscle mass, and particularly in skeletal muscle strength and power. Once a critical threshold is surpassed, this loss significantly contributes to the development of disability⁶⁰.

The pathophysiological mechanisms underlying sarcopenia are well-documented and overlap with those of frailty⁶¹: Normally, muscle homeostasis relies on a delicate equilibrium between the creation of new muscle cells, hypertrophy, and protein degradation. This balance is regulated by the brain, endocrine system, and immune system, and is influenced by nutrition and physical activity levels.

For **screening and diagnosing sarcopenia**, it is worth highlighting the sequential assessment guidelines from the European Working Group on Sarcopenia in Older People –EWGSOP2– (Figure 11)⁶².

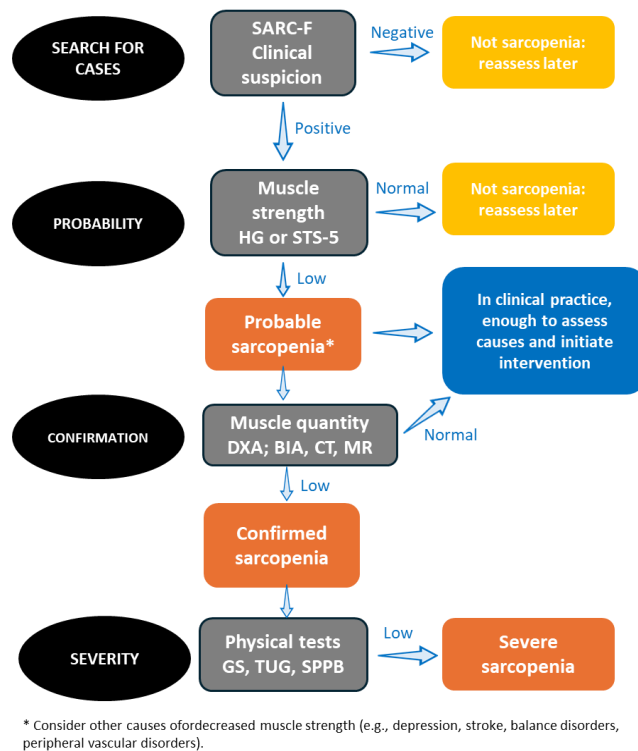


Figure 11. EWGSOP2 Algorithm for the screening, diagnosis, and quantification of sarcopenia. Source: Adapted from Cruz-Jentoft et al⁶².

1.4.2 Functional capacity and intrinsic capacity

The 2015 WHO World Report on Ageing and Health underscores the importance of fostering healthy ageing by encouraging the development and preservation of functional capacity, a vital factor in supporting people's well-being⁴⁶.

Functional capacity refers to the health-related attributes that allow individuals to engage in activities and pursue what matters to them. It is shaped by a combination of an individual's intrinsic capacity, their environment, and the interplay between these elements. **Intrinsic capacity**, in turn, encompasses the full range of physical and mental abilities an individual can draw upon at any given moment (see Figure 12).

For instance, a person with hearing loss experiences reduced intrinsic capacity in auditory function, which also impacts their functional capacity by hindering their ability to engage with their surroundings. While a hearing aid would not enhance their intrinsic capacity, it would boost their functional capacity to interact with the environment.

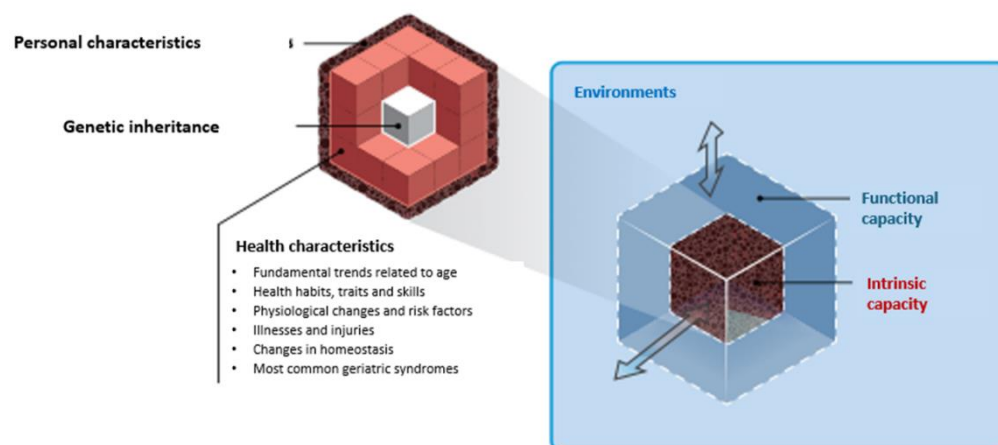


Figure 12. Schematic representation of the concepts of functional capacity and intrinsic capacity. Source: World report on ageing and health (2015).⁴⁶

The evaluation of intrinsic capacity, along with any resulting interventions, hinges on five key domains (see Figure 13): cognition, psychological well-being (encompassing mood and socialization), sensory function (including vision and hearing), vitality (reflecting homeostatic regulation or the balance between energy intake and expenditure), and locomotion (encompassing muscle function). It is worth highlighting that these five domains of intrinsic capacity are not isolated; rather, they interact dynamically with one another.

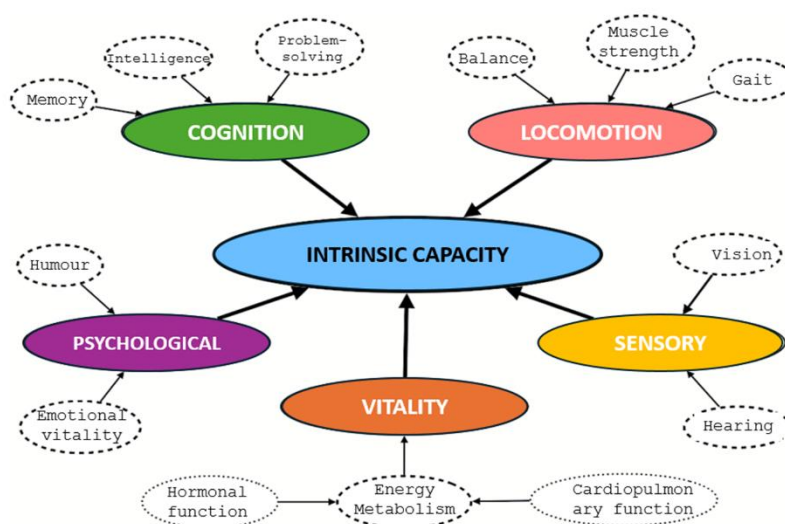


Figure 13. Five domains of the intrinsic capacity construct. Examples of possible subdomains are also provided. Source: Cesari M, et al.⁶³

In practical terms, intrinsic capacity can be seen as the "flip side" of frailty (see Figure 14): While frailty reflects the accumulation of deficits, intrinsic capacity represents an individual's "degree of reserve." Focusing on intrinsic capacity shifts the perspective

toward preserving abilities (a "*glass half full*" approach) rather than dwelling on losses or deficits (a "*glass half empty*" view).



Figure 14. Visual representation of the concepts of intrinsic capacity and frailty.

Source: Own elaboration

These **two concepts are thus complementary**: **Frailty** —a framework increasingly familiar to healthcare professionals— supports an approach centred on secondary prevention of disability and tailored interventions. In contrast, **intrinsic capacity** offers a broader, proactive perspective aimed at promoting healthy ageing from an earlier stage.

2. Epidemiology and impact of frailty

2.1 Prevalence and incidence

2.1.1 Population prevalence

While there is no universal agreement on the prevalence of frailty in the general population—likely due to variations in its conceptualization and measurement tools—a recent meta-analysis estimates the prevalence among individuals over 65 at **18%** (95% CI 15-21%)⁶⁴. Prevalence varies across settings: **community-based studies report a rate of ~12%** (95% CI 10-15%)—whereas in **hospital and residential environments**—it can **exceed 50%**^{65–68}.

The prevalence of frailty also correlates with age and sex:

- **Frailty and sex:** Most epidemiological research indicates a higher prevalence of frailty and pre-frailty among women, consistent across all age groups studied.
- **Frailty and age:** Frailty prevalence rises with age, increasing from about 5% among those aged 65-69 to approximately 25% in individuals aged 85 and older.

2.1.2 Annual incidence

The **incidence rates** of **frailty** and pre-frailty are approximately **40** and **150** new cases **per 1,000 people per year**, respectively. Of the pre-frail (those at increased risk of developing frailty), approximately 1 in 5 will go on to become frail within the following year⁶⁴.

2.2 Consequences of frailty

2.2.1 Frailty and socioeconomic impacts

There exists a significant, bidirectional relationship between frailty and social determinants:

- **Impact of socioeconomic conditions on frailty.** Numerous studies confirm that socioeconomic status influences frailty^{33,35,69}: **Individuals with limited financial resources tend to exhibit higher frailty** levels. Poverty, social exclusion (including racism, discrimination, and stigmatization), and *deprivation* are key social determinants driving poor health outcomes in this group, compounded by deficits in social and cultural capital such as inadequate social support, limited

relationships, or the digital divide. These factors manifest in challenges such as maintaining active, healthy ageing; accessing a diverse, nutritious diet; securing transportation and mobility; and navigating or utilizing social and community resources⁷⁰.

Social isolation and involuntary loneliness are also strongly linked to frailty and increased mortality risk⁷¹. Additionally, frailty prevalence shows geographic variation, with a north-south gradient in Europe (higher in the south), and a notable correlation with educational attainment.

- **Socioeconomic consequences of frailty** Data from the FRADEA study indicate that in Spain, healthcare costs for a frail older individual are roughly double those for a non-frail older person, averaging €2,500 per person per year⁷².

A study in Catalonia⁷³ further revealed escalating healthcare costs across frailty levels: €1,420.19 for robust individuals, €2,845.51 for pre-frail individuals, €4,200.05 for frail individuals, and €5,610.73 for very frail individuals. Irrespective of age or sex, frailty incurs an additional healthcare cost of €1,171 per person annually —equating to 2.25 times the cost for frail individuals compared to their non-frail counterparts.

2.2.2 Health outcomes associated with frailty

Frailty is linked to several significant adverse health outcomes^{11,42,58,74–79}:

- **Mortality:** Frailty exhibits a robust correlation with mortality, standing out as the chronic condition most strongly associated with death in older adults. This mortality is multifactorial, exceeding what can be attributed solely to the severity or progression of individual chronic diseases —whether cardiovascular, respiratory, renal, cancerous, mental health-related, or dementia-related. No gender-based differences in mortality linked to frailty have been observed.
- **Disability and dependence:** There is a clear positive relationship between frailty and disability. The risk of disability doubles (odds ratio [OR] of 2) for basic activities of daily living and increases 2.5-fold (OR 2.5) for instrumental activities.
- **Institutionalization:** Frailty heightens the risk of institutionalization (OR 1.7), with functional and cognitive factors being the most significant contributors to this elevated risk.
- **Falls and fractures:** Observational studies indicate that physical frailty markedly elevates the risk of falls (OR 1.7), with this predictive power being particularly strong for short-term risk (less than 1 year). Frailty is also strongly associated with an increased risk of fractures (OR 2.78).

- **Cognitive impairment:** Mounting evidence points to a bidirectional relationship between frailty and cognitive impairment: Individuals with cognitive impairment face a higher risk of frailty, while frail individuals are significantly more likely to develop cognitive impairment.
- **Polypharmacy:** A direct correlation exists between frailty, multimorbidity, and polypharmacy. As the number of multimorbidities rises, so does the likelihood of increased medication use, which in turn heightens frailty risk. Additionally, both frailty and polypharmacy are linked to a greater chance of drug interactions and adverse effects.
- **Quality of life:** Frail individuals (but not those in a pre-frail state) report a significantly poorer perception of quality of life (OR 3.88).

2.2.3 Frailty and hospitalization

Frailty serves as a predictor—in the short- and medium-term— of **hospital admission risk** (with an Odds Ratio [OR] of 1.8, though findings vary across studies), as well as the likelihood of readmission or challenges in discharge. Frail individuals also face a substantially higher risk of **complications** during hospitalization, with frailty identified as the primary risk factor for adverse events. These events include the onset of new geriatric conditions or syndromes, worsening of pre-existing diseases, complications in treatment management, suffering, disability, and even death^{7,65–70}.

The decline in functional and cognitive abilities following hospitalization, known as **nosocomial disability**, affects 5% to 60% of individuals over 75 years old. Up to 50% of established disability cases originate from a hospitalization episode, and it is estimated that two-thirds of those affected are either institutionalized or pass away within a year⁸⁰.

3. Diagnosis of frailty

3.1 Diagnosis of frailty: general overview

While experts widely agree on the **importance of assessing frailty**, debate persists regarding its practical implementation^{12,54,77,81}. In managing frail individuals, various approaches — each inherently complementary— often intersect⁵⁹.

3.1.1 From a population-based to an individualized perspective on frailty

Frailty assessment engages both systems and organizations (health and social) —where care equates to resource management and planning—, and professionals —for whom care is tied to addressing individuals' multidimensional needs—. Effectively supporting frail individuals requires aligning organizational care models, which adopt a population-level perspective, with personalized care tailored to each person:

- **Population-based perspective on frailty:** From a broad, population-level standpoint, the goal is to tailor care to the distinct realities and needs of various groups —non-frail individuals, pre-frail individuals, those with early frailty, and those with intermediate or advanced frailty. To achieve this, most countries in our region have implemented population screening and stratification systems (see Figure 15).

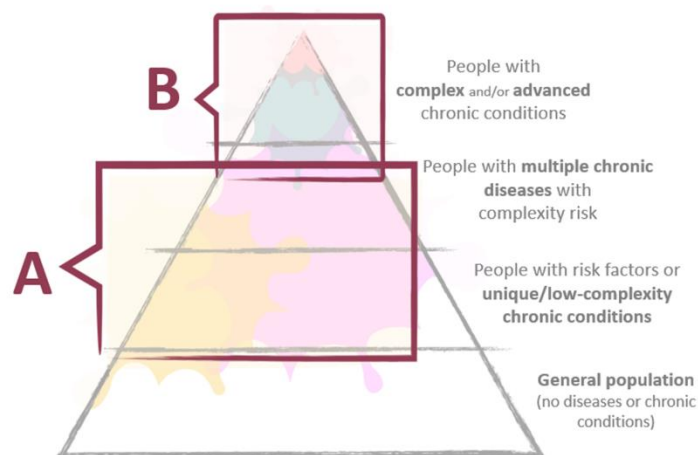


Figure 15. Utility of frailty across degrees of complexity and chronic conditions in different population groups. A) Frailty as a foundation for population screening to identify at-risk individuals who could benefit from preventive measures to halt or reverse progression toward disability. B) Frailty as a tool for situational diagnosis in patients with complex chronic conditions and/or advanced chronic diseases. *Adapted from Amblàs-Novellas et al.*⁸²

The purpose of this stratification is to tailor care system designs to the specific traits of each population group. Integrating this population-based perspective with an individualized approach is crucial⁸³:

- **Individualized approach to frailty:** To effectively meet the needs of older adults and individuals with chronic health conditions, a "precision" or personalized approach is vital, one that accounts for each person's unique characteristics. Such customization is essential for these individuals, whose needs frequently extend beyond the scope of standardized protocols and clinical practice guidelines.

Recognizing frailty offers significant benefits to both professionals and those receiving care, serving a dual purpose (see Figure 16):

A. It aids in identifying individuals at risk of developing disability, enabling preventive actions.

B. It supports situational diagnosis —akin to assessing the degree of frailty— particularly to tailor interventions to individual needs.

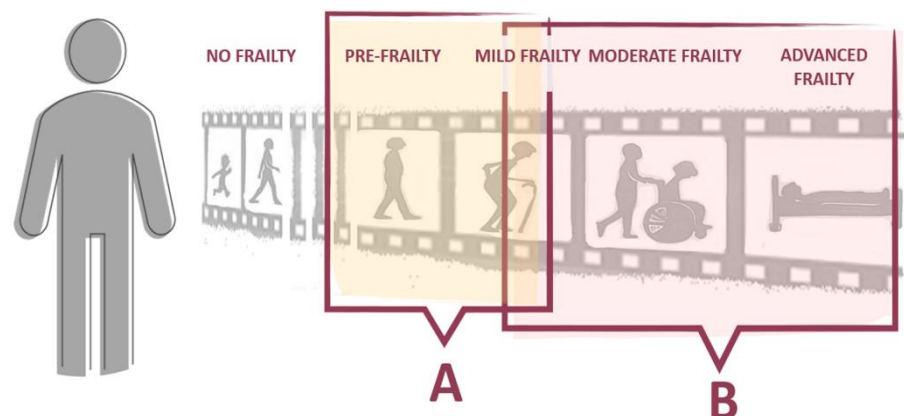


Figure 16. Individualized approach to frailty and applications of the frailty concept. *Source: Own elaboration*

3.1.2 Practical application of the frailty concept

The document [Catalan model of care for people with frailty, complex chronic \(CCP\) and advanced chronic \(ACP\) condition](#) proposes a four-stage individualized care model (Figure 17):

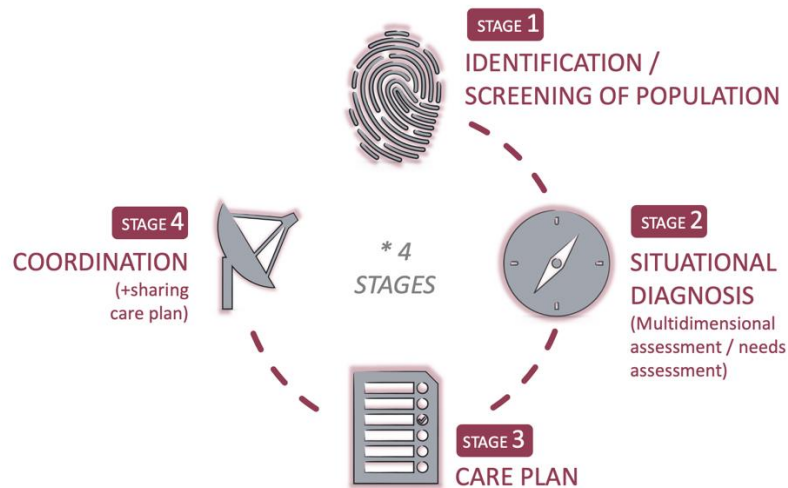


Figure 17. Care model supporting person-centred care. *Source: own elaboration.*

From a practical standpoint, the concept of frailty proves particularly valuable in the first two phases of this care model (see Figure 18):

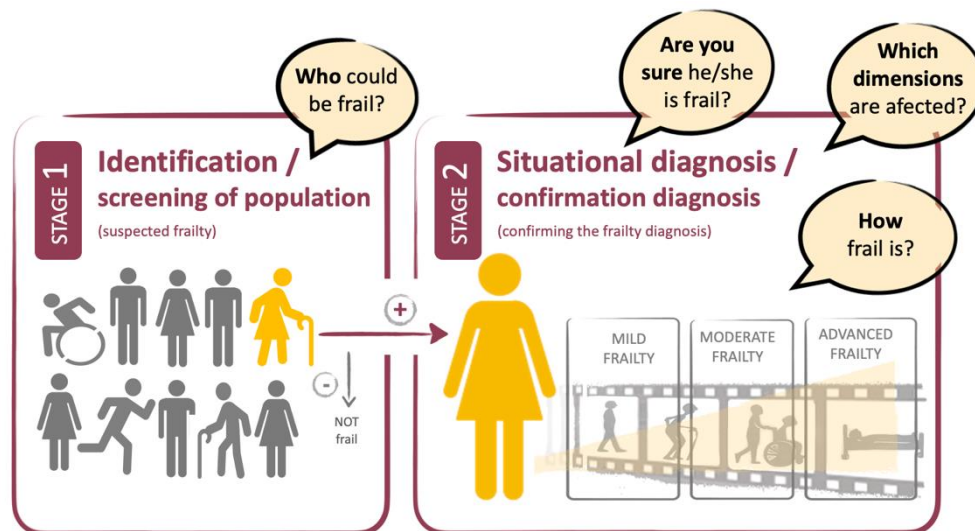


Figure 18. Utility of the frailty concept in clinical practice. *Source: Own elaboration*

- Stage 1. Population screening/identification of individuals at high risk of developing frailty:** When the goal is proactive, early detection of individuals who could benefit from preventive measures, a binary approach —classifying pre-frailty or early frailty as either "present" or "absent"— can be effective. To achieve this, various tools may be employed, such as physical performance tests or instruments rooted in the syndromic model of frailty.

- **Stage 2. Situational diagnosis/frailty confirmation:** Confirming and quantifying frailty involves a multidimensional evaluation. This can be more qualitative, such as conducting a Comprehensive Geriatric Assessment –CGA–) or quantitative, such as calculating a frailty index.

Beyond this framework, frailty evaluation —irrespective of the tool employed— has proven valuable across various **situations and circumstances**:

- **Surgical pathology:** Frailty detection tools have been shown to assist anaesthesiologists and surgeons in predicting perioperative complications, mortality risk, and length of hospital stay. Cardiac surgery stands out as the field with the most robust evidence, where frailty serves as a reliable indicator of mortality and complications in procedures like bypass or valve surgery —particularly among older patients—. In this setting, identifying frailty is not merely diagnostic; it aims to guide interventions —such as surgical prehabilitation— to enhance patient outcomes and tailor care to individual needs^{84–91}.
- **Cardiac pathology:** Frail individuals with heart failure or ischemic heart disease face a higher likelihood of mortality, either during hospitalization or within one month post-discharge. Evaluating frailty levels can inform decisions regarding invasive, high-risk therapies^{92–96}.
- **Chronic renal failure:** Evidence shows that frail individuals with chronic renal failure are at increased risk of falls, hospitalization, reduced quality of life, and death^{97–99}.
- **Chronic respiratory disease:** A strong link exists between frailty and chronic respiratory disease, with each condition elevating the risk of the other. When both coexist, mortality risk rises significantly^{100,101}.
- **Cancer:** In cancer patients, frailty predicts all-cause mortality (including postoperative mortality), chemotherapy intolerance, and postoperative complications. Routine frailty assessments can play a key role in shaping treatment plans for these individuals^{102–105}.

3.2 Population screening for frailty: goals and methods

3.2.1 WHY conduct population screening for frailty?

Frailty screening is primarily employed in **two closely linked scenarios** (see Figure 19)^{83,105–110}:

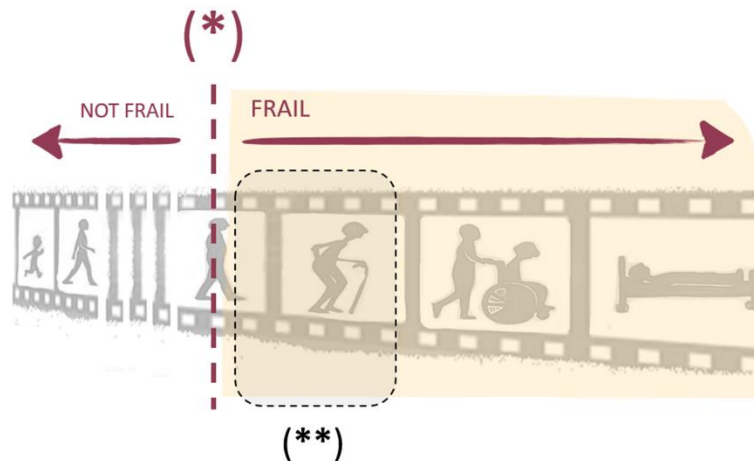


Figure 19. Purposes of frailty screening: (*) Detecting individuals at risk of adverse health outcomes; (**) Identifying candidates for disability prevention programmes.

Source: Own elaboration

- **Identification of individuals at risk of more adverse health outcomes:** Since frailty is associated with a heightened risk of poorer health outcomes, collecting data on the prevalence of frail individuals within a population can serve multiple purposes. One key application is:
 - **Population-level monitoring of older adults' health status.** Traditional health metrics, such as the incidence of specific diagnoses, may fall short in effectively comparing the health of older populations across time, regions, or demographic subgroups. Identifying frailty offers an additional, quantifiable health measure that complements existing indicators, is independent of specific diagnoses, and applies broadly to all older individuals.
 - **Identification of indicators for health and social service needs.** Knowing the prevalence of frailty across different regions and healthcare settings is especially valuable for planning health resource allocation. This is because frailty strongly correlates with increased care needs, resource utilization, institutionalization, and hospitalization.
- **Identifying candidates for disability prevention programmes:** frailty—particularly in its early stages—can be viewed as a potentially reversible condition. A wealth of evidence—some derived from our own context^{111–113} highlights the value of identifying older adults at risk of disability who could benefit from preventive interventions. These actions aim to halt or reverse frailty (see Figure 20)^{111,112}, while also considering the influence of social determinants of health.

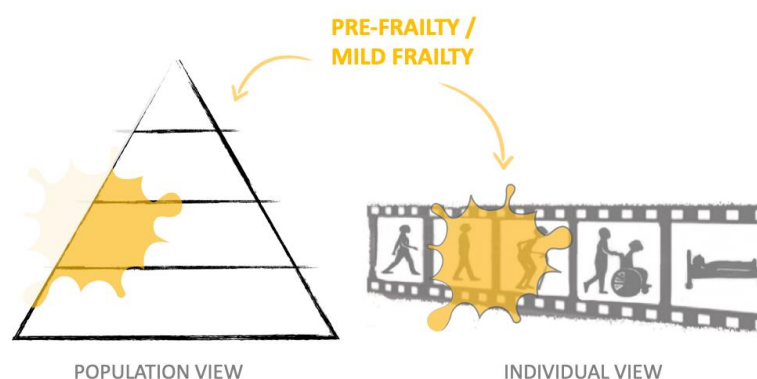


Figure 20. Target population for screening individuals with early-stage frailty. *Source: own elaboration.*

3.2.2 WHO should undergo frailty screening?

At present, the evidence does not justify universal, proactive frailty screening for the entire population. However, there is some agreement that **screening should be targeted** to a specific subset of older adults, potentially based on the presence of certain associated traits^{68,114}. Despite this, no consensus exists on standardized screening recommendations (see Table 2).

GUIDELINE	WHO SHOULD UNDERGO FRAILITY SCREENING?	PROPOSED TOOL(S)
Update of the Consensus Document on the Prevention of Frailty in the Elderly . Ministry of Health, 2022.	- Opportunistically, to people aged $\geq 70^*$ who consult primary care for any reason. - Active screening, for people aged $\geq 70^*$ who present with a series of specific conditions <i>* Only in people with a Barthel Index ≥ 90</i>	- SPPB < 10 or - GS < 0.8 m/s <u>As alternatives:</u> - TUG ≥ 12 seconds - FRAIL ≥ 1
Preventive and Health Promotion Activities Programme (PAPPS) of the SEMFYC (Spanish Society of Family and Community Medicine)	People aged ≥ 80 years and/or polypharmacy, hospitalization, comorbidity, falls...).	Physical performance tests (SPPB, GS, TUG...)
Self-training course in Primary Health Care (CAAPS) from the Catalan Society of Family and Community Medicine (CAMFIC)	People: > 80 years, or - aged 65-80 if they have subjective complaints of memory loss, depression, balance disturbances/falls, weight loss, tiredness or fatigue/slowness, loss of strength/recent functional loss, etc.	- Physical performance tests - GFST

Fit for frailty. British Geriatric Society. National Health Service (NHS). UK.	Opportunistic screening of people consulting for geriatric syndromes (falls, mobility problems, delirium, incontinence or susceptibility to the side effects of medication, etc.) * Currently, proactive screening is also carried out through information systems, using the electronic Frailty Index (eFI)	▪ TUG ▪ GS ▪ PRISMA-7
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Table 2. Candidates for frailty screening and tools proposed according to different guides. GFST: Gérontopôle Frailty Screening Tool. SPPB: Short Physical Performance Battery. TUG: Timed up&go. GS: gait speed. *Source: own elaboration.*

In 2017, in **Catalonia**, work was carried out with expert professionals with the aim of reaching a consensus on the instrument of choice for the community screening of people with initial frailty, with the Gérontopôle Frailty Screening Tool (GFST) being the proposed tool¹¹⁵.

3.2.3 HOW OFTEN should frailty screening occur?

There is no universal agreement on the **frequency of frailty screening** or whether it should be conducted opportunistically or proactively. However, the 2022 [Consensus Document on the Prevention of Frailty in the Elderly](#), issued by the Ministry of Health, provides the following guidance for post-screening follow-up⁸:

- **For individuals identified as frail**, reassessment is recommended every **6 months**, alongside the implementation and monitoring of proposed interventions, unless the CGA indicates a shorter interval. This reassessment should involve repeating the same test used for the initial evaluation or diagnosis, tracking changes in scores over time.
- **For those who screen negative for frailty**, **annual** follow-up is advised, with additional evaluations recommended following **significant health events**, such as hospitalization or the worsening of a chronic condition.

3.2.4 HOW should you screen for frailty? Tools for population-level frailty screening

A variety of tools have been developed for screening frailty at the population level, categorized based on their features (see Appendix 2 for a concise overview of each tool). These include:

- **Questionnaires administered by professionals.** Some are adaptations of Fried's criteria⁴⁷, tailored for community-based frailty screening —such as the Gérontopôle Frailty Screening Tool (GFST)¹¹⁵, the FRAIL questionnaire¹¹⁶ or the SHARE Frailty Instrument¹¹⁷—; Others are more commonly applied in hospital

settings, including the Edmonton Frailty Scale ¹¹⁸ or the Identification of Seniors At Risk (ISAR) ¹¹⁹.

- **Self-reported questionnaires:** Some, like the FRAIL or PRISMA7¹⁰⁹ questionnaires, build on Fried's syndromic approach by adapting its criteria. Others, such as the Tilburg and Groningen tools, expand to include additional variables¹²⁰.
- **Physical performance tests:** Aligned with the concept of 'physical frailty,' numerous tests have been suggested for screening. Notable examples include the Short Physical Performance Battery (SPPB) ¹²¹, Timed, up & go (TUG)¹²², gait speed (GS)¹²³, and handgrip strength⁶⁰.
- **Frailty screening using information systems:** In recent years, approaches to population-level frailty screening have emerged that leverage data from electronic primary healthcare records. The electronic Frailty Index (eFI) stands out as the tool with the strongest evidence base¹²⁴. In Catalonia, promising efforts are underway, including the development of tools like eFRAGiCAP (Electronic Frailty Index with Electronic Health Records)¹²⁵ and e-SIF (Electronic Screening Index of Frailty)¹²⁶. The potential role of artificial intelligence in enhancing the identification process also warrants attention moving forward¹²⁷.

In **Catalonia**, aligning with the [Consensus on Scales and Tools for the Multidimensional Assessment of People in Catalonia](#) and the recommendations outlined earlier, the current proposal is to utilize the **Gérontopôle Frailty Screening Tool (GFST)**, which may be paired with the Short Physical Performance Battery (SPPB) for a more comprehensive assessment.

3.2.5 WHERE and UNDER WHAT CONDITIONS should frailty screening take place? Frailty screening across different contexts and scenarios

Frailty screening is most commonly and extensively practiced in community settings, particularly within primary and community care. Nevertheless, notable experiences in other settings have also been documented:

- **Frailty screening in primary and community care:** This represents the primary domain for frailty screening, backed by the most substantial body of published evidence^{11,77,128,129}. In this setting, it's worth noting that available frailty screening tools typically offer high sensitivity but limited specificity. Additionally, their positive and negative predictive values tend to be relatively low—for most indicators—, particularly when factoring in variables such as frailty prevalence, age, sex, and chronic conditions.

A growing recognition highlights the potential significance of frailty screening in this field. For example, frailty screening is increasingly viewed as a straightforward method to pinpoint older adults who would gain the most from a comprehensive

geriatric assessment (CGA)^{111,112,130,131}; Additionally, clinical practice guidelines are progressively advocating for tailoring therapeutic intensity and goals based on an individual's frailty level. This includes, for example, adjusting glycaemic or blood pressure targets to align with the person's degree of frailty¹³².

- **Frailty screening in non-healthcare community settings:** Promoting frailty screening in these settings can also be valuable, utilizing **simple tools**⁷⁷. Screening can be conducted proactively in places where older adults live or frequently visit —such as nursing homes, day centres, or senior centres¹³³— or opportunistically in other locations they frequent, including pharmacies, community care centres, social inclusion hubs, adult education facilities, or patient association gatherings. Social services can further contribute by helping to prevent and identify cases where older individuals, impacted by poverty or social exclusion, face an elevated risk of frailty. Another option involves **self-reported questionnaires**, which individuals can complete independently, either as part of targeted campaigns or on their own initiative via official websites^{109,120}.
- **Frailty screening in hospitals:** The hospital setting may not be an ideal location or time for conducting frailty screening with a preventive focus. However, evaluating frailty in this context has proven especially valuable for predicting adverse health outcomes^{34,134–136}. Various frailty screening tools, such as the ISAR, frailty indices, and clinical frailty scales, have demonstrated utility in hospitals. The strongest evidence for their application comes from acute geriatric units and emergency departments^{51,137,138}.

3.2.6 WHAT STEPS should follow once someone is identified as frail through screening?

Addressing the situation of a person suspected of frailty in a structured way demands a comprehensive perspective that encompasses various dimensions of health and social challenges: clinical, functional, emotional, cognitive, and social, among others. While population-level frailty screening (Stage 1) may already involve some degree of multidimensional evaluation, Stage 2 requires a deeper step —a **confirmed diagnosis of frailty or a situational assessment of the individual**, grounded in a thorough multidimensional needs assessment. This assessment serves three key purposes:

- Confirming the frailty diagnosis
- Determining the severity of frailty
- Pinpointing the affected dimensions along with the resulting needs

This evaluation lays the foundation for crafting a personalized care plan. The next chapter explores how the concept of frailty, viewed as an accumulation of deficits, provides insights and practical tools to guide this process.

3.3 Situational diagnosis and frailty: goals and methods

3.3.1 Goals of the situational diagnosis

The term "situational diagnosis" describes the outcome of a multidimensional assessment and needs evaluation, enabling professionals to gauge the individual's level of reserve or frailty (*Are they truly frail? To what extent?*), while also identifying the affected deficits or dimensions and the corresponding needs to address. This diagnostic process requires considering both a static view —capturing the current state or severity at a specific moment (a "snapshot")— and a dynamic perspective, tracking changes over time (a "film" or progression criteria) (see Figure 21)⁵²:

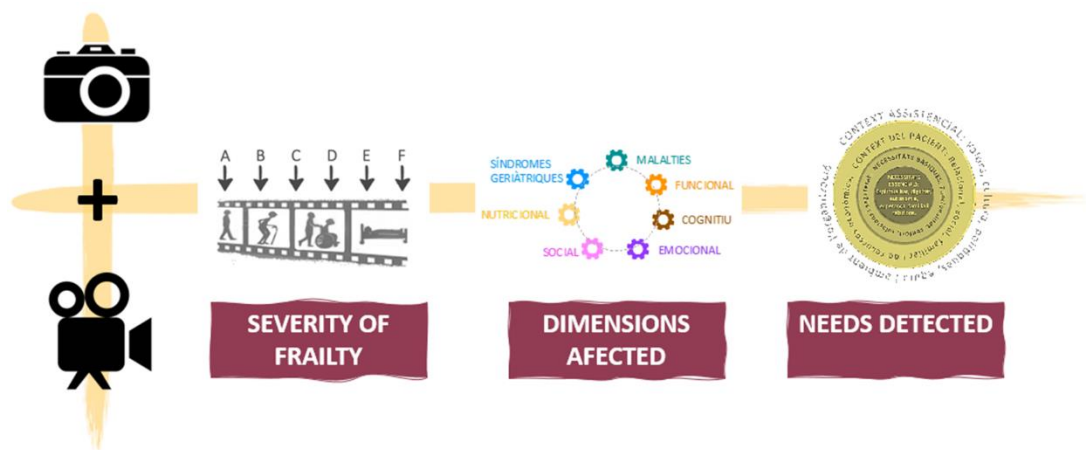


Figure 21. Situational diagnosis: Where does the person stand in their life trajectory— A, B, C, D, E, or F? Which dimensions are impacted? What are their specific needs? (This is particularly critical in cases of intermediate or advanced frailty.) Is the individual’s condition stable? How has it evolved over the past year?

Source: Own elaboration

Understanding the extent of frailty is highly valuable for **tailoring care**, ensuring actions are proportionate, and aiding professionals in aligning a person's clinical condition with appropriate care goals (see Figure 22). For example, recognizing signs of advanced and worsening frailty allows for a careful evaluation of the risks versus benefits of aggressive interventions, which might otherwise be excessive. Conversely, assessing frailty levels can also inform decision-making for individuals at risk of being overlooked or undertreated. Even if they possess a solid reserve, they might otherwise be denied additional diagnostic efforts or potentially beneficial treatments due to age-based assumptions⁵².

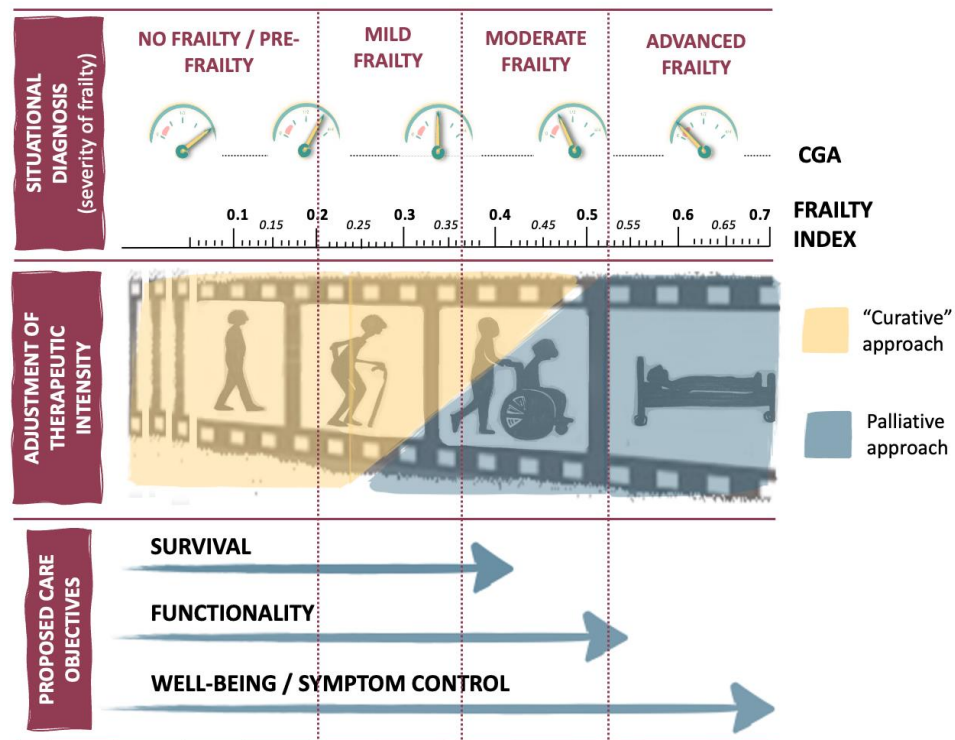


Figure 22. Conceptual framework for healthcare goals and adjustment of therapeutic intensity based on frailty level. Source: Own elaboration

3.3.2 Tools for situational diagnosis and frailty quantification

The tools available for situational diagnosis and measuring frailty levels —ranked from strongest to weakest evidence— include the Comprehensive Geriatric Assessment (CGA), frailty indices, and clinical frailty scales, each outlined briefly below.

- **Comprehensive Geriatric Assessment (CGA):** Undoubtedly, the CGA stands as the most evidence-backed multidimensional assessment system for older adults¹³⁹. Defined as a multidisciplinary diagnostic and therapeutic process, the CGA evaluates the clinical, psychological, and functional status of an older and/or frail individual. Its goal is to create a coordinated plan to optimize overall health within the context of ageing. This involves assessing multiple domains, such as clinical conditions, functional capacity (basic and instrumental activities), mental health (cognitive and emotional), and social circumstances. In this regard, two noteworthy initiatives currently under development in Catalonia deserve mention:
 - In Catalonia, a [Consensus on Scales and Tools for the Multidimensional Assessment of People](#) has been established through collaboration with various scientific societies and organizations specializing in psychometrics.

- Since conducting a full Comprehensive Geriatric Assessment (CGA) demands significant time and specialized expertise, rapid multidimensional or geriatric assessment tools can be practical in certain settings (*rapid geriatric assessment*)^{114,140–143}. These tools offer a broad, though less detailed, multidimensional perspective across various domains, typically taking about 10 minutes to complete and administered by a single professional from either the health or social care system. Within this framework, Catalonia has developed [VIG-express](#), a consensus-based, universal tool for basic multidimensional assessment. Designed to be accessible to all professionals in the health and social care sectors, this tool is currently undergoing validation.
- **Frailty Indices:** Since a person's frailty level exists on a continuous, non-binary spectrum —ranging from 'no frailty' to 'advanced frailty'— quantifying the degree of frailty becomes both relevant and essential. In this context, the accumulation of deficits model, embodied in frailty indices (FI), offers a compelling approach to situational diagnosis, showing a correlation with mortality that matches or exceeds that of the Comprehensive Geriatric Assessment (CGA)^{53,55,151,152,66,144–150}.

Frailty indices align with the multidimensional framework of CGA —in essence, an FI is a quantified version of a CGA. As previously noted, these indices are computed by dividing the number of deficits or health issues a person has accumulated by a predefined list of potential deficits.

- In our local context, the [Frail-VIG Index](#) stands out as a frailty index derived from CGA. It is straightforward in its content, quick to administer, and demonstrates strong discriminatory power across varying frailty levels, as well as robust predictive ability, with a notable correlation to mortality^{51,153}.

A more detailed explanation of frailty indices can be found in Appendix 2.

- **Clinical frailty scales:** These scales rely on clinical judgment and expert evaluation to visually categorize individuals based on their frailty level. The Clinical Frailty Scale, the most widely recognized among them and developed from the CSHA, assigns scores from 1 to 9 (see Figure 23)¹⁵⁴. A Catalan translation of this scale is available in Appendix 2.

CLINICAL FRAILTY SCALE		
	1	VERY FIT People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.
	2	FIT 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, even if occasionally symptomatic, but often are not regularly active beyond routine walking.
	4	LIVING WITH VERY MILD FRAILTY Previously "vulnerable," this category marks early transition from complete independence. 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	LIVING WITH MILD FRAILTY People who often have more evident slowing , and need help with high order instrumental activities of daily living (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.
	6	LIVING WITH MODERATE FRAILTY People who 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	LIVING WITH SEVERE FRAILTY 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	LIVING WITH VERY SEVERE FRAILTY Completely dependent for personal care and approaching 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 living with severe frailty . (Many terminally ill people can still exercise until very close to death.)

SCORING FRAILTY IN PEOPLE WITH DEMENTIA	
The degree of frailty generally 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. In very severe dementia they are often bedfast. Many are virtually mute.

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Clinical Frailty Scale ©2005–2020 Rockwood, Version 2.0 (EN). All rights reserved. For permission: www.geriatricmedicine.ca
Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.

Figure 23. Clinical Frailty Scale. Source: Rockwood K, et al.¹⁵⁴

While this tool appears simple and intuitive, it's critical to stress two points: pictograms alone are insufficient, and the frailty level should be determined following a Comprehensive Geriatric Assessment (CGA), not as a replacement for it¹⁵⁵.

3.4 Recording/coding the frailty diagnosis

The diagnosis of frailty lacks a specific ICD code, leading to the use of various 'proxy codes' that approximate the concept of frailty across different regions and countries. In Catalonia, the code **R54** has been adopted for individuals whose results on any of the previously mentioned validated instruments indicate this condition.

4. Managing frailty

Evaluating the degree of frailty equips professionals with a strong foundation for designing and tailoring interventions⁸².

4.1 Individual-level interventions

As previously noted, once frailty is identified, the intervention strategy will be heavily shaped by the goals, needs, and challenges uncovered during the multidimensional assessment. Generally, in cases of early-stage frailty, the care plan is likely to focus on secondary prevention, emphasizing interventions like physical exercise programmes or nutritional improvements. In contrast, for individuals with advanced frailty, the focus may shift toward tertiary or quaternary prevention, alongside prioritizing psychosocial support for both the individual and their caregiving network (see Figure 24).

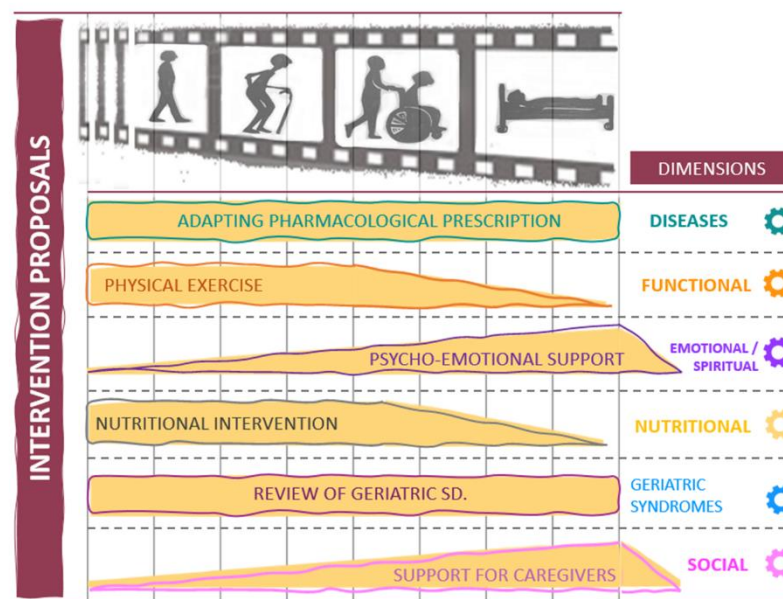


Figure 24. Examples of intervention adjustments based on frailty level.

Source: Own elaboration

Naturally, interventions can extend well beyond this basic framework. For instance, functionality encompasses more than just activities of daily living –particular attention should be given to participation in meaningful activities.–; Similarly, in the realm of social interventions and resources, there is a need to highlight the importance of leveraging existing community assets and social prescribing, such as mutual aid groups, adult education programmes, memory workshops, and more.

This chapter primarily focuses on interventions targeting individuals in a state of pre-frailty or early frailty. The interventions more specifically geared towards people with moderate and advanced frailty are described in document [Catalan model of care for people with frailty, complex chronic \(CCP\) and advanced chronic \(ACP\) conditions](#).

4.1.1 General principles

When caring for individuals identified as frail, several key considerations should guide the approach, including how information is handled, adherence to proposed interventions, and the nature of those interventions:

- **Information management:** After completing frailty screening and situational diagnosis, it's important to share the findings with the individual –and, where relevant, their caregiver– in a clear and thorough way. Discussing the 'frailty diagnosis' can serve as an effective entry point for outlining the intervention or treatment plan. During this process, **it's advisable to:**
 - Clarify that frailty is not a disease but a risk state, which may be reversible or improvable –depending on the circumstances–, and that it is often linked to existing, past, or potential chronic conditions.
 - Outline the potential or past consequences of frailty (e.g., falls, loss of daily living activities), if relevant.
 - Discuss and agree on interventions or recommendations, placing particular emphasis on lifestyle-related measures.
 - Define the roles of all parties involved in the care process, including community agents facilitating physical exercise interventions, if applicable.
 - Practice active listening to understand the individual's preferences, expectations, and values.

It's also worth noting that a 'frailty diagnosis' can feel unsettling for some older adults, particularly those who don't see themselves as frail or who resist being labelled with a term often tied to increased vulnerability, dependency, and broader 'losses.' As a group, older individuals with frailty are highly diverse, each bringing unique expectations, hopes, fears, strengths, and capacities, along with varying types and degrees of needs and support. It falls to healthcare professionals and policies to recognize and address these individual differences as much as possible, empowering individuals, upholding their dignity, and enabling person-centred care.

- **Adherence to interventions:** A critical factor in the success of interventions is the level of adherence frail individuals maintain with the proposed plan. For instance, multidomain interventions for frail older adults are twice as effective among those with the highest adherence rates¹⁵⁶.

Closely tied to adherence, **motivation** plays a vital role. While it is often boosted by the social connections fostered in community programmes, motivation is fundamental to encouraging participation and enhancing programme outcomes.

Equally crucial is the need to ensure **seamless sharing of key information** among the various teams and sectors involved in this process.

- **Types of interventions:** Interventions may target one or multiple domains and can be standardized or tailored to the individual (see Table 3). Notably, physical exercise and nutrition interventions often serve as foundational elements, given their proven effectiveness in mitigating frailty.

TYPE OF INTERVENTION	SINGLE-ELEMENT	MULTI-ELEMENT	MULTI-FACTOR or MULTI-DOMAIN
FEATURE	Single-domain intervention	Set of pre-selected/ standardized interventions	Individualized intervention based on multidimensional assessment and identified deficits
EXAMPLES	<i>Cognitive stimulation programme</i>	<i>Standardized physical exercise programme combined with nutritional support</i>	<i>For an individual with early frailty showing falls, malnutrition, and cognitive decline, an individualized care plan might include medication review, physical exercise, a nutritional programme, cognitive intervention, and additional measures focused on meaningful activities (e.g., environmental modifications, assistive devices, etc.).</i>

Table 3. Types of interventions, features and examples.

- **Elements of interventions:** Interventions can encompass exercise programmes, nutritional and cognitive support, engagement in meaningful activities, general lifestyle improvements, optimized management of geriatric conditions and syndromes —particularly through medication reviews and fall prevention— and psychosocial and environmental factors, with a focus on addressing sleep disturbances and unwanted loneliness. These elements are detailed below:

4.1.2 Intervention via physical activity and exercise

Extensive evidence highlights an inverse link between regular physical activity and frailty: older adults who are physically inactive are three times more likely to develop frailty compared to their active peers^{157–159}. Research also shows that progression from mild to advanced frailty is significantly more common among inactive individuals.

[The World Health Organization \(WHO\)](#) **defines physical activity** as any movement of the body driven by skeletal muscles that expends energy. This includes all forms of movement,

whether occurring during work, household tasks, or leisure. Physical activity –whether moderate or vigorous– supports health and well-being, while physical inactivity and sedentary behaviour elevate the risk of non-communicable diseases and other health issues. To address this, the WHO provides [recommendations](#) to **encourage physical activity and reduce sedentary habits**, summarized visually in Figure 25.

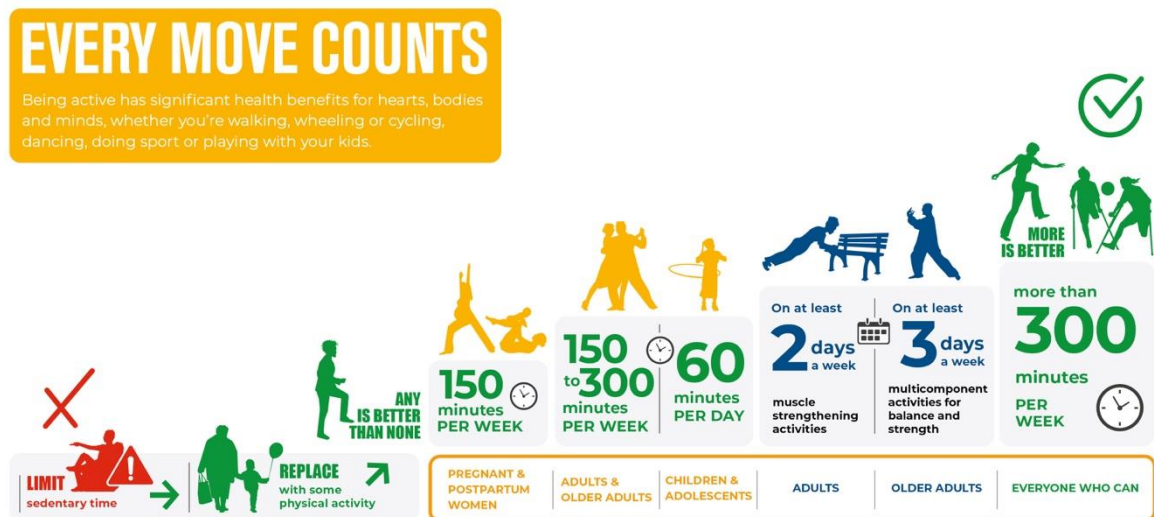


Figure 25. WHO infographic summarizing physical activity promotion across all ages. *Source:* WHO Guidelines on physical activity and sedentary behaviour.

Research indicates that most frail adults can gain advantages from **tailored physical exercise programmes**, ideally **multicomponent** in nature (incorporating aerobic endurance, flexibility, strength, and balance exercises) and delivered at a safe, tolerable intensity^{160–162}. While those with greater functional limitations or frailty may not achieve the minimum activity levels recommended for their age group, even light-to-moderate activity and muscle-strengthening exercises can slow the progression of functional decline.

Nonetheless, current evidence suggests that physical exercise interventions are most effective in reducing, reversing, or delaying frailty when conducted **in group settings** (via shared sessions). The benefits of individual home-based training remain less certain^{160–162}.

- **Advantages of physical exercise:** Physical exercise stands out as the **most effective intervention** for postponing disability and mitigating other negative outcomes tied to physical frailty. It has been shown to lower healthcare costs and, in some cases, yields better outcomes for mortality related to various diseases and chronic conditions compared to medications used for cardiovascular prevention. Among frail individuals, exercise enhances mobility, improves performance in daily activities, boosts walking ability, reduces mortality risk, increases bone mineral density, lowers the likelihood of institutionalization, and promotes overall well-being. Additional key benefits include:

- **Reduction in falls:** There is a strong connection between frailty, sarcopenia, and fall risk. Physical exercise is arguably the most well-established intervention for fall prevention, demonstrating effectiveness in both community-dwelling and residential populations. Multicomponent group exercises (incorporating balance, strengthening, and endurance) and group-based tai chi have been shown to decrease both the frequency and risk of falls¹⁶².
- **Cognitive enhancement:** Research indicates that weekly resistance exercise programmes not only boost walking speed but are also linked to a lower risk of dementia, Alzheimer’s disease, or mild cognitive impairment. These programmes yield cognitive benefits, particularly in executive functions—which are tied to fall risk—, due to the improvements driven by physical activity.
- **Emotional benefits:** Physical exercise has been shown to alleviate depressive symptoms in the short term, especially among individuals already experiencing depression. However, clinical trials have yet to fully establish its long-term impact on depressive or anxiety symptoms in frail older adults. One potential explanation for its antidepressant and anxiolytic effects may lie in the anti-inflammatory properties of physical exercise.
- **Limitations and risks of physical exercise:** The primary constraint in prescribing physical exercise stems from the context of multimorbidity. While this does not rule out exercise programmes, it necessitates thorough evaluation and customization to each individual’s situation. In such cases, more conservative programmes — adjusted for intensity, power, volume, and frequency— are recommended. A gradual progression typically enhances tolerance and minimizes side effects.

Absolute contraindications are generally limited to specific cardiovascular conditions, such as recent heart attack, unstable angina, uncontrolled hypertension, acute heart failure, or complete AV block. Caution is also warranted for individuals with insulin-treated diabetes, as exercise may affect hypoglycaemic treatment needs.

Lastly, a significant challenge with physical exercise programmes is poor **adherence**—particularly among those with no prior history of physical activity—. Aerobic exercises (e.g., walking, cycling) tend to see higher adherence rates than strength training programmes. Group-based exercise also boosts adherence compared to individual home workouts.

- **Characteristics of the exercise:** The most effective physical exercise programmes are **multicomponent**, tailored to an individual’s frailty level, and incorporate aerobic endurance, flexibility, strength, and balance exercises, ideally conducted in a community setting. This underscores the critical role of professionals trained in designing exercise programmes for frail older adults⁶. A notable example of such a multicomponent programme is the **VIVIFRAIL programme** (Appendix 3)¹⁵⁹. The **WHO** has also issued relevant [recommendations](#) on this topic.

- **Rehabilitation Plan for Catalonia:** In 2022, the Ministry of Health published the [“Rehabilitation Plan for Catalonia: A Comprehensive Approach to Functioning and Disability”](#). This plan is divided into two sections: the first outlines a model for a holistic approach to functioning and disability, while the second elaborates on strategies across thirteen domains, including promoting functioning and preventing disability within community settings.

4.1.3 Nutritional intervention

While frailty and malnutrition are distinct conditions, they are closely intertwined, and it’s common to encounter individuals experiencing both. Approximately two-thirds of older adults with malnutrition are frail, and one in ten frail individuals suffers from malnutrition. Additionally, frailty and malnutrition share connections with sarcopenia, cachexia, and obesity, all of which heighten the risk of adverse health outcomes, including reduced mobility, fractures, prolonged hospital stays, readmissions, morbidity, and mortality^{163–166}.

- **Shared pathophysiological basis of malnutrition and frailty:** Frailty and malnutrition overlap in numerous pathophysiological mechanisms, such as tissue loss, chronic inflammation, and shared sociodemographic, physical, and cognitive risk factors, including functional impairment. A systematic review has underscored the importance of both quantitative (energy intake) and qualitative (nutrient quality) aspects of nutrition in the onset of frailty in older age. Indeed, inadequate nutrition—whether in quantity or quality—stands out as a key contributor to the development of frailty¹⁶⁷.

The link between nutritional deficits and the emergence of frailty has long been recognized and is tied to the following:

- Low Fruit and Vegetable Intake: This leads to insufficient micronutrients and antioxidants (e.g., vitamins A, C, E, alpha- and beta-carotenes, selenium, zinc), which is linked to diminished physical function and increased frailty.
 - Low Protein Intake: Associated with sarcopenia and reduced muscle strength, this stems from a disrupted balance between protein synthesis and catabolism in healthy muscle; a balance that is disturbed in the chronic inflammatory state—often underlying frailty—.
 - Inadequate Caloric Intake: This heightens the risk of malnutrition and, consequently, frailty.
- **Nutritional recommendations for managing frailty:** Evidence does not support the effectiveness of standalone nutritional programmes—relying solely on supplementation (e.g., protein modules or complete formulas)—for improving function or reversing frailty. However, nutritional support **proves beneficial when paired with a physical exercise programme**, particularly in individuals with pre-existing malnutrition.

Initial recommendations should prioritize fostering a balanced diet aligned with markers of dietary quality, tailored to the individual's chewing and swallowing capabilities, and emphasizing adherence to the Mediterranean diet as part of broader lifestyle guidance. Research shows that stronger adherence to the **Mediterranean diet** correlates with a reduced prevalence and incidence of frailty. Key elements of this diet —fruits, vegetables, and olive oil—offer antioxidant and anti-inflammatory benefits, which, alongside a healthy lifestyle, may contribute to frailty prevention¹⁶⁸.

In this context, **additional strategies** such as group nutritional education, one-on-one counselling, recipe guides, and hands-on workshops can be especially effective. Initiatives like community kitchens have emerged as a valuable public health approach, helping to alleviate social isolation, enhance cooking and eating skills, and foster empowerment.

As for dietary specifics, some **targeted recommendations** include:

- **Ensuring adequate caloric intake.** For individuals at risk of or diagnosed with frailty-related malnutrition, efforts should address potential underlying issues (e.g., chewing/swallowing difficulties or dysphagia, reliance on others for eating, unnecessary dietary restrictions like low-salt or low-fat diets, medication side effects, or depression). Generally, the estimated energy need is 30 kcal per kg of body weight per day, adjusted based on nutritional status, physical activity level, clinical condition, and tolerance. To meet these needs, enriching meals with natural foods is preferred whenever feasible. When this falls short, Adapted Basic Food (ABF) —a line of high-nutrient products tailored in texture, nutrients, and flavours for older adults with chewing or swallowing challenges— can be utilized.
- **Ensuring adequate protein intake.** A general guideline is 1-1.2 g of protein per kg of body weight per day, spread across meals and sourced from high-biological-value proteins. Due to anabolic resistance in older adults, proper protein distribution is key, with a recommended 25-30 g per meal. For malnourished older individuals or those at risk due to acute or chronic conditions, this should increase to 1.2-1.5 g/kg/day¹⁶⁹. Sufficient protein intake is considered an independent protective factor against frailty, though debate persists about whether supplementation significantly enhances physical function. When supplementation is used, high-protein nutritional supplements have the strongest supporting evidence.

A notably debated topic is **vitamin D** supplementation. There's a clear link between low vitamin D levels (hypovitaminosis D), muscle weakness, and frailty, compounded by age-related declines —especially in skin and kidney function— that can hinder vitamin D synthesis¹⁷⁰. Thus, supplementation should be considered for frail older adults at risk of malnutrition or falls, particularly when serum 25-hydroxyvitamin D levels fall below 30 ng/ml (75 nmol/L). Recommended doses range from 20 to 25 µg/day (800-1,000 IU/day)¹⁷¹.

4.1.4 Intervention in health conditions, geriatric syndromes, and symptoms

The existence and severity of frailty are closely tied to the presence of geriatric diseases and syndromes. Identifying these chronic conditions and refining their management are critical steps in developing an effective care plan for affected individuals.

Numerous factors warrant consideration beyond the scope of this chapter^{172–175}. Among them, a key focus includes:

- **Medication review:** Ageing and the emergence of frailty often alter medication metabolism, heightening the risk of interactions and adverse effects. **Regularly assessing the pharmacological regimen** is a vital step in caring for frail individuals. Depending on the situational diagnosis and agreed-upon care goals (e.g., enhancing survival, preserving or improving function, or managing well-being and symptoms), adjustments might involve:
 - Discontinuing a prescribed therapy when the original indication no longer applies or when evidence of its benefit is lacking.
 - **Discontinuing medications with harmful side effects that may contribute to symptoms of frailty.** Medications most frequently linked to negative outcomes in frailty include anticholinergics (associated with cognitive impairment), long-acting benzodiazepines and other sedatives or hypnotics, specific sulfonylureas (which heighten fall risk), some opioids (which may increase confusion), and NSAIDs (which can lead to severe kidney issues in older adults).
 - Replacing one drug with one that poses fewer risks.
 - Modifying the dose of a medication as needed.
 - Adding a new drug that could offer potential benefits.

To facilitate these adjustments, professionals can rely on validated tools like the STOPP and START guidelines¹⁷⁶ or [person-centred prescribing frameworks](#), which are particularly effective for tailoring prescriptions to individual needs.

- **Fall risk:** Falls and fractures rank among the primary outcomes of frailty and are strongly linked to the development of dependency. Notably, a prior fall (post-fall syndrome) stands out as the leading risk factor for subsequent falls. For community-dwelling individuals, the most effective fall prevention strategy involves a multifactorial approach. This entails identifying risk factors —such as previous falls, polypharmacy, use of psychotropic or anticholinergic medications, gait and balance issues, vision or hearing impairments, and orthostatic hypotension— **and addressing these risks accordingly**. Interventions like physical exercise and home visits to modify the environment have proven effective in lowering fall risk among older adults.

- **Symptom review and management:** Irrespective of frailty severity, ensuring the individual's well-being—including effective symptom control (e.g., pain, dyspnea, anxiety)—is fundamental to maintaining quality of life and supporting the success of other interventions. For example, a physical exercise programme is unlikely to succeed if the participant's underlying joint pain from arthropathy remains poorly managed.

4.1.5 Intervention on cognitive aspects

As noted earlier, frailty and cognitive impairment share a bidirectional relationship^{17,18}:

- Many care strategies aimed at enhancing cognitive function also positively impact motor skills and autonomy to varying degrees. Research indicates that cognitive training—focused on boosting short-term memory, attention, information processing, and reasoning or problem-solving skills—can lower frailty scores from baseline to 12 months (6 months post-intervention).
- As previously highlighted, physical exercise has been shown to improve cognitive performance and emotional well-being.
- The value of relational and community-based activities promoting socialization—such as memory workshops, recreational programmes, and mutual aid groups—should also be underscored for individuals with cognitive challenges.

Combined programmes integrating physical exercise and cognitive stimulation (*dual-task* approaches) have proven beneficial for older adults with subjective memory complaints¹⁷⁷, mild cognitive impairment (MCI)¹⁷⁸, or cognitive frailty¹⁷⁹, enhancing both cognitive and physical health. However, evidence for combined programmes of cognitive stimulation and nutritional supplementation remains inconclusive.

4.1.6 Intervention on psycho-emotional aspects

While it's often challenging to determine whether psycho-emotional factors in frailty are a cause or effect, these elements can significantly influence the success of interventions, either enhancing or undermining them. Notably, frail individuals with depressive symptoms face a 2.5 times higher mortality risk compared to those with a stable mood (euthymic)^{20–22,180}.

Beyond pharmacological treatment for depression, evidence supports the effectiveness of interventions combining tailored cognitive and physical exercise programmes. These structured initiatives, designed to bolster the psychological well-being of frail older adults in settings like day centres and care homes, have been shown to reduce depressive symptoms, lower fall risk, and sustain cognitive function¹⁸¹.

A **psychological strategy rooted in cognitive-behavioural therapies** can effectively enhance depressive symptoms, daily functioning, and quality of life for individuals diagnosed with major neurocognitive disorder (dementia) or mild neurocognitive disorder (MCI)¹⁸².

The **psycho-emotional focus** becomes especially critical in cases of advanced frailty, where nearing the end of life can amplify challenges such as limitations, loss of control, fear, or anger. Addressing spiritual needs also becomes essential in these scenarios²⁰⁻²².

Other impactful activities include:

- **Intergenerational Participation Programmes:** These initiatives strengthen social connections for older adults in residential settings, reducing depression and feelings of loneliness¹⁸³.
- **Animal-Assisted Therapy:** As a complement to promoting healthy ageing, this approach has been shown to uplift mood, enhance cognitive function, alleviate anxiety, and lessen the sense of loneliness¹⁸⁴.

4.1.7 Environmental and social interventions

Interventions —whether individual or group-based— targeting socially frail older adults should prioritize the most relevant aspects for each person. This includes considering resources, activities, behaviours, and skills that can address social needs, as well as the ability to navigate these resources effectively. These interventions should also aim to meet the social and healthcare needs of the individual, their family, or caregiving environment, incorporating strategies to mitigate environmental risks, such as the potential for caregivers to abandon their role.

Moreover, both tailored interventions and broader policies should target the social resources available to frail individuals (e.g., support for family members) and their engagement in personal activities or social behaviours (e.g., involvement in community events). Equally important is fostering their self-management skills related to social resources and activities, such as: the capacity to build and sustain friendships or initiate social participation.

The bulk of evidence on social and environmental interventions focuses on three key areas:

- **Home inspections and guidance on architectural barriers:** Over 50% of falls, particularly among frail individuals, occur at home. Evidence supports the effectiveness of addressing household hazards, especially for those with a history of falls or visual impairments.
- **Promoting social activities and community networks:** Interventions in this area enhance the health and independence of older adults. In that regard, beyond specialized social programmes, strategies to mitigate the social aspects of frailty can aid in disability prevention, leveraging [community assets and resources](#), non-professional volunteers, and third-sector organizations.

- **Addressing Unwanted Loneliness:** This has emerged as a critical focus due to its link with frailty progression^{185,186}.

There remains a clear need for further research into social interventions. For instance, emerging evidence suggests that new technologies could positively influence frailty-related issues like loneliness and social isolation.

4.2 Interventions at the population and organizational level

In this context, health and social systems in most developed nations have introduced targeted initiatives to facilitate the rollout of specialized programmes. Numerous care models and experiences have been developed to support frail older adults, far too many to cover comprehensively in this chapter.

4.2.1 General recommendations

When considering key factors for policies addressing frail individuals and the roles of organizations providing their care, the **10 recommendations** from the British Geriatric Society's [Fit for Frailty](#) document¹⁸⁷ offer valuable guidance:

- It must be ensured that **all older adults identified as frail** undergo a **multi-faceted evaluation** of their clinical, functional, mental, and social needs, grounded in the principles of **Comprehensive Geriatric Assessment (CGA)**.
- **Interventions should aim** to enhance the overall physical, mental, and social functioning of frail older adults, adopting a goal-focused rather than disease-focused approach, tailored to individual needs and personal strengths.
- **Shared care and support plans** must be crafted with the involvement of frail older adults, their families, and caregivers at every stage of the process.
- Many frail individuals also experience cognitive impairment or dementia (and vice versa). **Those with both conditions** have especially intricate care needs, necessitating a personalized care planning approach.
- Consideration of **end-of-life care** and [advance care planning](#) is crucial for frail older adults, particularly in cases of advanced disease progression.
- Promoting the **integration of health and social care systems** is vital for this population, as frail older adults stand to gain the most from a cohesive approach.

- It may be beneficial to **flag frail older adults as such in shared information systems**, ensuring that all potential caregivers are informed of their specific needs and characteristics.
- Since **family members, friends, and private caregivers provide most long-term care**, it's essential to identify these individuals, ensure they have access to support, and connect them with primary care and community teams.
- Given the risks hospitalization poses to this group, **alternatives**—that are safe and effective—are needed to address the needs of frail older adults during episodes of decompensation.
- When **hospitalization** is clinically necessary, discharge planning should be proactive, addressing both clinical and social needs.

4.2.2 Stakeholders in frailty care

Caring for frail older adults exemplifies the **necessity for an integrated and interdisciplinary approach**. This requires collaborative and agreed-upon efforts at multiple levels: among professionals and organizations delivering care, as well as within government policies, which must account for this reality in health planning.

- **Role of Primary and Community Healthcare (PCHC):** Primary healthcare plays a pivotal role in promoting healthy ageing and directly caring for frail older adults. This spans from screening and identifying frailty to crafting a care plan (sometimes in coordination with specialized services) and providing ongoing follow-up.
 - *Professionals: All healthcare professionals contribute to identifying and managing frailty, beyond their specific roles.* For instance, physicians are key in diagnosing frailty, pinpointing its causes and related issues, and formulating the care plan. Nurses and case managers support health education, monitor preventive efforts, aid in detection, co-design the care plan, and ensure follow-up. Health social workers focus on addressing the social needs of the individual, their caregivers, and their relational network. Other professionals (such as physiotherapists, occupational therapists, nutritionists, psychologists/emotional well-being specialists, pharmacists, and administrative staff—depending on each centre's organizational structure—), also play critical roles in caring for this group, which often has the greatest need for system-wide support.
 - *Specific interventions:* Certain targeted strategies for caring for frail older adults in this setting have proven effective:
 - Preventive Home Visits: Particularly beneficial for those with advanced frailty, visits by nursing professionals and/or case managers—especially when paired with telecare—have shown positive outcomes. These visits, which involve co-designing care plans and promoting lifestyle changes, have been linked to a reduced prevalence of frailty.

- Use of Technology: Some researchers propose that technology can enhance patients' sense of security, lowering their risk levels. It may also support better decision-making and enable care that is more closely aligned with the patient's needs.

The [Consensus Document on the Prevention of Frailty in the Elderly](#) (Ministry of Health, 2022) recommends that Primary and Community Healthcare (PCHC) consider referring individuals to other specialists –preferably geriatricians–, when a Comprehensive Geriatric Assessment (CGA) does not confirm frailty or when conditions are identified that warrant management at a different care level. These include:

- Recent functional decline or frailty without a clear clinical explanation.
- Acute confusional state with an uncertain cause or requiring hospital-level intervention.
- Newly emerged cognitive impairment.
- High fall risk. When one of the following situations occurs: two or more falls in the past year, a fall necessitating significant or urgent medical attention, or a fall accompanied by gait or balance issues.
- Complex polypharmacy that is challenging to manage.
- Multimorbidity that is difficult to address effectively.

A notable example of a multicomponent initiative in Catalonia is the **+ÁGIL Barcelona programme**, active since 2016 across various basic health areas in Barcelona. This programme provides an integrated approach for individuals with early frailty, blending primary healthcare, geriatric services, and local community resources. It includes a comprehensive assessment of the individual, followed by a three-month multicomponent intervention at the primary care centre, with subsequent follow-up leveraging non-health community resources within the same health area. The program has been subject to longitudinal evaluation¹¹³, offers implementation [materials and guidelines](#), and is recognized as a best practice on the [WHO's Decade of Healthy Ageing website](#).

■ **Role of hospital and intermediate care services**

*In the realm of **outpatient care***, various specialties and professionals contribute to the care of frail older adults at different stages. Due to their specialized nature, the following warrant particular attention:

- **Specialized Outpatient Geriatric Assessment Teams (SOGAT):** These teams can assist in diagnostics, treatment, and follow-up as needed, typically at the request of primary care for more complex cases.
- **Day Hospitals:** These facilities can offer tailored programmes for frail older adults, such as physical exercise, coordination with community initiatives, and support and education for families.

Regarding **hospitalization resources**, robust evidence shows that interventions grounded in geriatric assessment, personalized treatment, and interdisciplinary care—delivered during hospitalization and/or post-discharge—outperform standard care for frail patients. Notably, in 80% of cases, hospital-related functional decline can be reversed through preventive measures based on Comprehensive Geriatric Assessment (CGA) during admission, such as mobilization, support for daily activities, nutritional care, emotional support, and orientation.

Key distinctions in this domain include:

- **Acute Hospitals:** Acute Geriatric Units (AGU) and hospital support teams have shown strong evidence (Type Ia, Grade A recommendation) in shortening hospital stays, increasing the likelihood of returning home, and reducing care-related costs for this population.

Additionally, frailty is increasingly integrated across all acute hospital services as a critical factor in personalized decision-making. For instance, frailty assessment is pivotal in [decisions regarding transcatheter aortic valve implantation \(TAVI\)](#) and the [initiation of renal replacement therapy in advanced chronic kidney disease](#).

- **Intermediate Care Resources:** These services—whether inpatient, outpatient, or home-based—are specifically tailored to support frail individuals. They may focus on rehabilitation—particularly for those with early or moderate frailty—, or palliative care—especially for those with advanced frailty—.

■ **Role of social services, residential centres, and community assets**

Social services play a vital role in maintaining frail individuals—particularly those with a strong social component to their frailty—, in optimal conditions within their family and social environments. They provide essential support for active and healthy ageing in the community. Social work professionals are key in this context, leveraging their expertise to foster social change, development, cohesion, and individual empowerment and autonomy. Guided by principles of social justice, human rights, collective responsibility, and respect for diversity, they engage both individuals and systems to address life's challenges and enhance well-being.

Meanwhile, the profile of residents in **home care facilities** underscores the need to prioritize these settings in any frailty care programme. Depending on the centre and the frailty detection tool used, prevalence rates can range from 20% to 80%. Studies indicate that over 60% of residents may have advanced frailty, potentially nearing the end of life (defined as being in their final year). In these settings, promoting physical activity within the facilities is recommended, utilizing shared spaces like outdoor areas and green zones. These spaces serve as social hubs and stimulating environments that support multicomponent physical exercise, adequate sun exposure, and social interaction, all of which help maintain functional capacity and emotional well-being. Additionally, even limited exposure to green

spaces —such as residential streets in urban areas— has been shown to benefit health.

Lastly, the significance of **community facilities and programmes** deserves special attention. These resources are essential across the full spectrum of frailty —from early stages, where the focus is on preventing disability, to intermediate and advanced stages, where they are crucial for addressing complex care needs—. For individuals with initial frailty, various facilities (e.g., community centres, day centres, sports facilities, bank-run social welfare centres, or public spaces —like parks and community gardens—) and programmes offer health promotion and prevention activities. These include physical exercise, cognitive stimulation, nutrition workshops, and broader initiatives like active and healthy ageing programmes. The [Social Prescription and Health Programme](#) is a strategy designed to enhance emotional well-being by tapping into the health-promoting potential of individuals and their communities through prescribed social and cultural activities. Complementing this, [Assets and Health](#) is a mapped resource of community activities and assets that boost health and well-being, integrated into the medical record system (ECAP—Clinical Centre for Primary Care).

- **The role of family and caregivers.** The majority of personal care and ongoing support for frail older adults in the community comes from family, friends, and/or private caregivers. As such, these individuals should be integrated into the multidisciplinary team as key players and advocates in executing the agreed-upon care plan. This integration may require tailored training, along with tools and support from professionals and organizations.

4.2.3 Efficiency of population-level preventive interventions

While the effectiveness of disability prevention programmes for individuals has been thoroughly established —as previously detailed— the question remains: Are these programmes efficient?

Although more robust evidence is still needed to draw definitive conclusions, evaluations of disability prevention programmes suggest the following when compared to ‘usual care’:

- **Home and Community-Based Preventive Interventions:** These are both effective (improving health outcomes and quality of life while reducing frailty prevalence) and efficient (delivering cost savings, particularly for the frailest individuals).
- **Hospital-Based Interventions:** These are also effective (enhancing health outcomes and quality of life) and come at a relatively lower cost, though the cost difference is not substantial.

4.3 Summary of evidence on frailty prevention

Interventions targeting frailty are **effective across all frailty levels and in various settings** (e.g., hospitals and residential care). Robust evidence supports the combination of physical exercise with optimized nutrition, alongside other approaches incorporating cognitive training or medication reviews, for instance.

However, uncertainties persist in some areas where effectiveness is unclear or evidence remains limited; for example: 1) Exercise interventions lacking group support appear less effective; 2) Multidisciplinary care excels when it includes specific actions –like supervised exercise–, but falls short when limited to mere coordination of interventions— though such coordination has proven valuable in other facets of care for this population.

Table 4 shows the recommendations and the degree of recommendation according to the published literature:

GENERIC INTERVENTION		Level of EVIDENCE	RECOMMENDATION	Degree of RECOMMENDATION
GROUP PHYSICAL EXERCISE Programmes: These programmes, delivered in group settings for institutionalized pre-frail and frail individuals or those living in the community, effectively reduce frailty levels (or at least enhance certain frailty indicators).		1a	Based on current evidence, it is recommended to implement group physical exercise programmes to halt the progression of pre-frailty and frailty among both community-dwelling and institutionalized older adults.	A
GROUP EXERCISE COMBINED WITH INDIVIDUAL HOME PRACTICE: For non-frail, pre-frail, and frail older adults in the community, programmes blending group exercise with home practice effectively lower frailty levels, improve or delay declines in strength, enhance gait speed, and reduce fear of falling.		1c	Current evidence supports the use of combined group and home-based physical exercise programmes to prevent the worsening of pre-frailty and frailty in non-institutionalized older adults living in the community.	B
INDIVIDUALLY TAILORED PHYSICAL EXERCISE Programmes: For non-frail, pre-frail, and frail older adults in the community, these programmes show no effect on mobility, functional status, or biomedical and psychosocial factors.		1c	Based on current evidence, individually tailored physical exercise programmes are not recommended to prevent the progression of pre-frailty or frailty in community-dwelling individuals.	-
NUTRITIONAL INTERVENTION in Pre-frail and frail older adults in the community	It is effective when paired with physical exercise.	1a	Per current evidence, to prevent frailty and its progression in community-dwelling older adults, improving nutritional intake—particularly for those who are malnourished— is recommended in combination with physical exercise.	A
	It effectively reduces long-term exhaustion and boosts calorie intake.	1c		
	It shows no apparent impact on body weight.	-		
COGNITIVE TRAINING: Delivered to pre-frail and frail older adults in the community, this is an effective intervention for lowering frailty levels.		1c	Based on current evidence, health and social care professionals are encouraged to offer cognitive training to prevent the progression of existing frailty and the onset of	B

		frailty in community-dwelling older adults.	
MULTICOMPONENT STRATEGY: Combining nutritional intervention, physical training, and cognitive training, this approach effectively reduces frailty levels in pre-frail and frail adults in the community.	1c	Per current evidence, health professionals can implement this integrated multicomponent treatment to prevent frailty progression and onset in older adults living in the community.	B
INDIVIDUALIZED STRATEGIES: For both frail community-dwelling and hospitalized patients, personalized approaches—including the review of health issues and geriatric syndromes—effectively reduce frailty indicators, enhance physical performance and basic daily activities, and lower costs.	1c	Based on current evidence, an individualized, multi-domain management strategy is recommended for frail individuals, whether in the community or during hospitalization.	B
EDUCATIONAL SESSIONS: Group sessions for older adults not at risk of frailty and individual sessions for those at risk, provided to non-institutionalized individuals, are effective interventions.	1c	Health professionals can deliver these group and individual educational sessions to prevent the progression of pre-frailty and frailty among community-dwelling older adults outside of institutional care.	B
HOME VISITS: Conducted by nurses or other health professionals for frail older adults, and paired with telecare , these visits have been shown to decrease frailty prevalence.	1c	Health professionals can utilize home visits to implement preventive measures that curb the progression of pre-frailty and frailty in older adults.	B
ACUTE GERIATRIC UNITS (AGUs): These units have demonstrated effectiveness in shortening hospital stays, boosting the chances of patients returning home, and cutting costs related to caring for frail older adults.	1a	Based on current evidence, it is recommended that frail older individuals requiring acute hospital admission receive care aligned with the geriatric model of AGUs .	A

Table 4. Summary of the evidence and the degree of recommendation of the strategies to manage/prevent situations of frailty. *Source:* Own elaboration, based on the content of “Effectiveness of interventions to prevention pre-frailty and frailty progression in older adults: systematic review”, by Apóstolo J, et al (doi: 10.11124/JBISRIIR- 2017-003382).

5. Next steps

This document **serves as an initial foundation for consensus**, from which several critical elements will need further elaboration:

- **A strategy will be outlined for the primary prevention of frailty** (focused on healthy ageing) **and secondary prevention** (aimed at disability prevention) **in Catalonia**. This will prioritize a community-based, health-promoting approach. Key considerations will include the WHO's framework for incorporating 'intrinsic capacity,' local experiences and evidence, and the integration of collaborative dynamics.
- Furthermore, for **individuals with intermediate or advanced frailty and/or complex chronicity (CCP/ACP)**, there is a pressing need to further refine the healthcare response within Health and Social Services systems. A key focus is enhancing the personalization of care, as outlined in Document [Catalan model of care for people with frailty, complex chronic \(CCP\) and advanced chronic \(ACP\) conditions](#). To address the needs of this population, Catalonia has developed a [multifaceted care model](#), supported by an [annual action plan](#) that specifies priorities and initiatives to be implemented.
- Efforts must also be made to **enhance the spread, education, and application of frailty-related knowledge**. This includes a blend of foundational training on frailty concepts and, more critically, on evidence-based disability prevention strategies. Ongoing updates on scientific progress, familiarity with new protocols, and oversight of evaluations for both existing and emerging programmes are also essential.
- **There is a need to foster frailty research and assessment efforts**. These include translational and clinical studies, as well as service-oriented research. These should focus on testing new interventions —especially non-pharmacological ones— and healthcare processes, evaluating their effects on patients, families, and the broader health and social systems. To ensure research quality, collaboration with or access to specialized services and resources with the expertise to design robust research and evaluation methods will be crucial. Networked research approaches could enhance outcomes and facilitate their integration into clinical practice.

6. Bibliography

1. WHO. World Health Assembly A69_R3-sp. 2020;9(2011):1–5. Accessible at: https://apps.who.int/iris/bitstream/handle/10665/253189/A69_R3-sp.pdf?sequence=1&isAllowed=y
2. World Health Organization. World report on ageing and health. 2016. Accessible at: <http://www.who.int/ageing/events/world-report-2015-launch/en/>
3. World Health Organization. Global strategy and action plan on ageing and health. 2017. Accessible at: <http://www.who.int/ageing/WHO-GSAP-2017.pdf?ua=1>
4. World Health Organization. WHO Global Strategy on People-centred and Integrated Health Services: Interim Report. 2015. Accessible at: <https://iris.who.int/handle/10665/155002>
5. Health Programme of the European Union. ADVANTAGE JA. Accessible at: <https://www.advantageja.eu/index.php/es/>
6. ADVANTAGE JA. Frailty Prevention Approach. 2018. Accessible at: https://www.sanidad.gob.es/areas/promocionPrevencion/envejecimientoSaludable/fragilidadCaidas/estrategiaSNS/docs/Frailty_Prevention_Approach.pdf
7. Ministry of Health – Government of Catalonia. Catalonia Health Plan 2021-2025. 2021. Accessible at: <http://hdl.handle.net/11351/6606>
8. Ministry of Health. Update of the Consensus Document on the Prevention of Frailty in the Elderly (2022). Accessible at: https://www.sanidad.gob.es/profesionales/saludPublica/prevPromocion/Estrategia/EnvejecimientoSaludable_Fragilidad/docs/ActualizacionDoc_FragilidadCaidas_personamayor.pdf
9. Kim DH, Rockwood K. Frailty in Older Adults. *N Engl J Med* 2024;391(6):538–48.
10. Dlima SD, Hall A, Aminu AQ, et al. Frailty: a global health challenge in need of local action. *BMJ Glob Health*. 2024 Aug 9;9(8):e015173.11. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *Lancet* 2013;381(9868):752–62.
12. Rodríguez-Mañas L, Féart C, Mann G, et al. Searching for an operational definition of frailty: A delphi method based consensus statement. the frailty operative definition-consensus conference project. *Journals Gerontol - Ser A Biol Sci Med Sci* 2013;68(1):62–7.
13. Fedarko NS. The Biology of Aging and Frailty. *Clin Geriatr Med*. 2011 Feb;27(1):27–37.
14. Bischoff Erik, Staehelin S. The effect of undernutrition in the development of frailty in older persons. *Journals Gerontol - Ser A Biol Sci Med Sci* 2006;61(6):585–8.
15. Jeejeebhoy KN. Malnutrition, fatigue, frailty, vulnerability, sarcopenia and cachexia: overlap of clinical features. *Curr Opin Clin Nutr Metab Care* 2012;15(3):213–9.
16. Cemal M, Faith S, Emin M. Malnutrition increases frailty among older adults:How? *Clin Nutr* 2016;35(4):979.
17. Bergman H, Ferrucci L, Guralnik J, et al. Frailty: an emerging research and clinical paradigm issues and controversies. *Journals Gerontol Ser A Biol Med Sci* 2007;62:731.
18. Ferrer A, Badia T, Formiga F, et al. Frailty in the oldest old: prevalence and associated factors. *J. Am. Geriatr. Soc.* 2013;61(2):294–6.
19. Garre-Olmo J, Calvó-Perxas L, López-Pousa S, et al. Prevalence of frailty phenotypes and risk of mortality in a community-dwelling elderly cohort. *Age Ageing [Internet]* 2013 [cited 2014 Feb 25];42(1):46–51. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22454134>
20. Mezuk B, Edwards L, Lohman M, et al. Depression and frailty in later life: A synthetic review. *Int J Geriatr Psychiatry* 2012;27(9):879–92.
21. Mezuk B, Lohman M, Dumenci L, Lapane KL. Are depression and frailty overlapping syndromes in mid- and late-life? A latent variable analysis. *Am J Geriatr Psychiatry* 2013;21(6):560–9.
22. Ni Mhaolain AM, Fan CW, Romero-Ortuno R, et al. Frailty, depression, and anxiety in later life. *Int Psychogeriatr [Internet]* 2012;24(8):1265–74.
23. Inouye SK, Studenski S, Tinetti ME, et al. Geriatric syndromes: Clinical, research, and policy implications of a core geriatric concept. *J Am Geriatr Soc* 2007;55(5):780–91.

24. Nowak A, Hubbard RE. Falls and frailty: lessons from complex systems. *J R Soc Med* 2009;102(3):98–102.
25. Ensrud KE, Ewing SK, Cawthon PM, et al. A comparison of frailty indexes for the prediction of falls, disability, fractures, and mortality in older men. *J Am Geriatr Soc* 2009;57(3):492–8.
26. Quinlan N, Marcantonio ER, Inouye SK, et al. Vulnerability: The crossroads of frailty and delirium. *J Am Geriatr Soc* 2011;59(Suppl 2):S262–8.
27. Eeles EMP, White S V, O'Mahony SM, et al. The impact of frailty and delirium on mortality in older inpatients. *Age Ageing* 2012;41(3):412–6.
28. Herr M, Robine JM, Pinot J, et al. Polypharmacy and frailty: Prevalence, relationship, and impact on mortality in a French sample of 2350 old people. *Pharmacoepidemiol Drug Saf* 2015;24(6):637–46.
29. Poudel A, Peel NM, Nissen L, et al. The impact of frailty and polypharmacy on adverse outcomes in older inpatients. *J. Am. Geriatr. Soc.* 2014;62:S264.
30. Hathaway B, Vaezi A, Egloff AM, et al. Frailty measurements and dysphagia in the outpatient setting. *Ann Otol Rhinol Laryngol* 2014;123(9):629–35.
31. Yuska C. A New Model to Identify Shared Risk Factors for Pressure Ulcers and Frailty in Older Adults Key Practice Points. *Education&Training* 2010;34(6):86–92.
32. Nessighaoui H, Lilamand M, Patel K V, et al. Frailty and pain: two related conditions. *J Frailty Aging* 2015;4(3):144–8.
33. Theou O, Brothers TD, Rockwood MR, et al. Exploring the relationship between national economic indicators and relative fitness and frailty in middle-aged and older Europeans. *Age Ageing* 2013;42(5):614–9.
34. Evans SJ, Sayers M, Mitnitski A, Rockwood K. The risk of adverse outcomes in hospitalized older patients in relation to a frailty index based on a comprehensive geriatric assessment. *Age Ageing* 2014;43(1):127–32.
35. Andrew MK, Mitnitski A, Kirkland S a, Rockwood K. The impact of social vulnerability on the survival of the fittest older adults. *Age Ageing* 2012;41(2):161–5.
36. Armstrong JJ, Andrew MK, Mitnitski A, et al. Social vulnerability and survival across levels of frailty in the Honolulu-Asia Aging Study. *Age Ageing* 2015;44(4):709–12.
37. Bilotta C, Casè A, Nicolini P, et al. Social vulnerability, mental health and correlates of frailty in older outpatients living alone in the community in Italy. *Aging Ment Health* 2010;14(8):1024–36.
38. Harrison JK, Clegg A, Conroy SP, Young J. Managing frailty as a long-term condition. *Age Ageing* 2015;44(5):732–5.
39. Tinetti ME, Fried TR, Boyd CM. Designing Health Care for the Most Common Chronic Condition — Multimorbidity. *JAMA* 2012;307(23):2493–4.
40. Vetrano DL, Palmer K, Marengoni A, et al. Frailty and Multimorbidity: A Systematic Review and Meta-analysis. *J Gerontol A Biol Sci Med Sci.* 2019 Apr 23;74(5):659–666.
41. Amblàs J, Amil P, Bocanegra I, et al. Catalan model of care for people with frailty, complex chronic (CCP) and advanced chronic (ACP) conditions. Barcelona: 2020. Accessible at: https://salutweb.gencat.cat/web/.content/_ambits-actuacio/Linies-dactuacio/Estrategies-de-salut/Cronicitat/Documentacio-cronicitat/arxius/Model-de-Bases-de-Cronicitat.pdf
42. Fried LP, Tangen CM, Walston J et al. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci* 2001;56:M146–56.
43. Limón E, Blay C, Burdoy E. A propòsit del CAAPS sobre fragilitat i cronicitat complexa: algunes lliçons apreses. *Butlletí de l'Atenció Primària de Catalunya.* 35:1–3.
44. Stolz E, Mayerl H, Freidl W. Fluctuations in frailty among older adults. *Age Ageing* 2019;48(4):547–52.
45. Amblàs-Novellas J, Torné A, Oller R, et al. Transitions between degrees of multidimensional frailty among older people admitted to intermediate care: a multicentre prospective study. *BMC Geriatr* 2022;22(1):1–9.
46. World Health Organization, WHO - World Health Organization. World report on ageing and health. 2016. Accessible at: <http://www.who.int/ageing/events/world-report-2015-launch/en/>
47. Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci* 2001;56(3):M146–56.
48. Mitnitski AB, Mogilner AJ, Rockwood K. Accumulation of deficits as a proxy measure of aging.

ScientificWorldJournal. 2001 Aug 8;1:323-36. 49.

49. Alonso Bouzón C, Rodríguez-Mañas L, Carnicero JA, et al. The Standardization of Frailty Phenotype Criteria Improves Its Predictive Ability: The Toledo Study for Healthy Aging. *J Am Med Dir Assoc* 2017;18(5):402–8.
50. Rockwood K, Mitnitski A. Frailty in relation to the accumulation of deficits. *J Gerontol A Biol Sci Med Sci* 2007;62:722–7.
51. Amblàs-Novellas J, Martori JC, Espauella J, et al. Frail-VIG index: A concise frailty evaluation tool for rapid geriatric assessment. *BMC Geriatr* 2018;18(1).
52. Amblàs-Novellas J, Espauella J, Rexach L, 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;6(2).
53. Rockwood K, Song X, MacKnight C, et al. A global clinical measure of fitness and frailty in elderly people. *CMAJ* 2005;173:9–13.
54. Rockwood K, Andrew M, Mitnitski A. A comparison of two approaches to measuring frailty in elderly people. *J Gerontol A Biol Sci Med Sci* 2007;62(7):738–43.
55. Kulminski A, Yashin A, Arbeev K, et al. Cumulative index of health disorders as an indicator of aging-associated processes in the elderly: results from analyses of the National Long Term Care Survey. *Mech Ageing Dev* 2007;128(3):250–8.
56. Rockwood K, Mitnitski A. Frailty Defined by Deficit Accumulation and Geriatric Medicine Defined by Frailty. *Clin. Geriatr. Med.* 2011;27:17–26.
57. Rockwood K, Mitnitski A. Limits to deficit accumulation in elderly people. *Mech Age Dev* 2006;127(5):494–6.
58. Hastings SN, Purser JL, Johnson KS, et al. Frailty predicts some but not all adverse outcomes in older adults discharged from the emergency department. *J Am Geriatr Soc* 2008;56(9):1651–7.
59. Cesari M, Gambassi G, van Kan GA, Vellas B. The frailty phenotype and the frailty index: different instruments for different purposes. *Age Ageing* 2014;43(1):10–2.
60. Cruz-Jentoft AJ, Bahat G, Bauer J, et al. Sarcopenia: Revised European consensus on definition and diagnosis. *Age Ageing*. 2019;48(1):16–31.
61. Rosenberg IH. Sarcopenia: Origins and clinical relevance. *Clin. Geriatr. Med.* 2011;27(3):337–9.
62. Cruz-Jentoft AJ, Bahat G, Bauer J, et al. Sarcopenia: Revised European consensus on definition and diagnosis. *Age Ageing*. 2019 Jan 1;48(1):16–31
63. Cesari M, Araujo de Carvalho I, Amuthavalli Thiyagarajan J, et al. Evidence for the Domains Supporting the Construct of Intrinsic Capacity. *Gerontol A Biol Sci Med Sci*. 2018 Nov 10;73(12):1653–1660.
64. Rónán O’Caoimh, Lucia Galluzzo, Ángel Rodríguez-Laso, et al. Prevalence of frailty at population level in European ADVANTAGE Joint Action Member States: a systematic review and meta-analysis. *Ann Ist Super Sanita* 2018;54(3):226–38.
65. Syddall H, Roberts HC, Evandrou M, et al. Prevalence and correlates of frailty among community-dwelling older men and women: Findings from the Hertfordshire Cohort Study. *Age Ageing* 2009;39(2):197–203.
66. Hoogendijk EO, van der Horst HE, Deeg DJH, et al. The identification of frail older adults in primary care: comparing the accuracy of five simple instruments. *Age Ageing* 2013;42(2):262–5.
67. Francisco J. García-García, Ana Alfaro Acha. Fragilidad : de la epidemiología a la clínica. *Rev Esp Geriatr Gerontol* 2015;45(5):250–1.
68. Andradas Aragonés E, Labrador Cañadas MV, Lizarbe Alonso V, Molina Olivas M. Documento de consenso sobre prevención de fragilidad y caídas en la persona mayor. Estrategia de Promoción de la Salud y Prevención en el SNS. 2014. Accessible at: <http://envejecimiento.csic.es/documentos/documentos/MinisterioSanidad-FragilidadCaidas-personamayor-12-2014.pdf>
69. Perissinotto CM, Stijacic Cenzer I, Covinsky KE. Loneliness in older persons: A predictor of functional decline and death. *Arch Intern Med* 2012;172(14):1078–83.
70. Wilkinson R, Marmot M. Social determinants of health: the solid facts, 2nd ed. World Health Organization; 2003. Accessible at: <https://iris.who.int/handle/10665/326568>
71. Wang F, Gao Y, Han Z, et al. A systematic review and meta-analysis of 90 cohort studies of social

- isolation, loneliness and mortality. *Nat Hum Behav* 2023;7(8):1307–19.
72. García-Nogueras I, Aranda-Reneo I, Peña-Longobardo LM, Oliva-Moreno J AP. Use of Health Resources and Healthcare Costs associated with Frailty: The FRADEA Study. *J Nutr Heal Aging* 2017;21(2):207–14.
 73. Lavado À, Serra-Colomer J, Serra-Prat M, et al. Relationship of frailty status with health resource use and healthcare costs in the population aged 65 and over in Catalonia. *Eur J Ageing* 2023;20(1).
 74. Rockwood K, Howlett SE, MacKnight C, et al. Prevalence, attributes, and outcomes of fitness and frailty in community-dwelling older adults: report from the Canadian study of health and aging. *J Gerontol A Biol Sci Med Sci* 2004;59(12):1310–7.
 75. Woods NF, LaCroix AZ, Gray SL, et al. Frailty: emergence and consequences in women aged 65 and older in the Women’s Health Initiative Observational Study. *J Am Geriatr Soc* 2005;53(8):1321–30.
 76. Auyeung TW, Lee JSW, Kwok T, Woo J. Physical frailty predicts future cognitive decline - a four-year prospective study in 2737 cognitively normal older adults. *J Nutr Health Aging* 2011;15(8):690–4.
 77. Sternberg SA, Schwartz AW, Karunanathan S, et al. The Identification of Frailty : A Systematic Literature Review. *J Am Geriatr Soc* 2011;59:2129–38.
 78. Theou O, Rockwood K. Should frailty status always be considered when treating the elderly patient? *Aging health* 2012;8(3):261–71.
 79. Fan Y, Huang J, Zhou Y, Gu X GD. Does the Impact of Frailty on All-Cause Mortality in Older Persons Differ between Women and Men? A Meta-Analysis. *J Am Med Dir Assoc* 2021;22(3):606.e1-606.e6.
 80. Martínez-Velilla N, Herrero AC, Cadore EL, Sáez de Asteasu ML. Iatrogenic Nosocomial Disability Diagnosis and Prevention. *J Am Med Dir Assoc* 2016;17(8):762–4.
 81. Reports BM. Operationalizing a Frailty Index from a Standardized Comprehensive Geriatric Assessment. *J Am Geriatr Soc*. 2004 Nov;52(11):1929-33.
 82. Amblàs-Novellas J, Espauella J, Inzitari M, et al. En busca de respuestas al reto de la complejidad clínica en el siglo XXI: a propósito de los índices de fragilidad. *Rev Esp Geriatr Gerontol* 2017;52(3):159-166
 83. Hoogendijk EO, Afilalo J, Ensrud KE, et al. Series Frailty 1 Frailty : implications for clinical practice and public health. *Lancet* 2019;394(10206):1365–75.
 84. Richards SJG, D’Souza J, Pascoe R, et al. Prevalence of frailty in a tertiary hospital: A point prevalence observational study. *PLoS One* 2019;14(7):1–12.
 85. Panayi AC, Orkaby AR, Sakthivel D, et al. Impact of frailty on outcomes in surgical patients: A systematic review and meta-analysis. *Am J Surg* 2019;218(2):393–400.
 86. Ko FC. Preoperative Frailty Evaluation: A Promising Risk-stratification Tool in Older Adults Undergoing General Surgery. *Clin. Ther.* 2019;41(3):387–99.
 87. Walston JD. Frailty. UpToDate. 2023. Accessible at: <https://www.uptodate.com/contents/frailty>
 88. Fierbințeanu-Braticevici C, Raspe M, Preda AL, et al. Medical and surgical co-management – A strategy of improving the quality and outcomes of perioperative care. *Eur J Intern Med* 2019;61(October):44–7.
 89. Colburn JL, Mohanty S, Burton JR. Surgical Guidelines for Perioperative Management of Older Adults: What Geriatricians Need to Know. *J Am Geriatr Soc* 2017;65(6):1339–46.
 90. Fowler AJ, Abbott TEF, Prowle J, Pearse RM. Age of patients undergoing surgery. *Br J Surg* 2019;106(8):1012–8.
 91. Shinall MC, Arya S, Youk A, et al. Association of Preoperative Patient Frailty and Operative Stress with Postoperative Mortality. *JAMA Surg* 2019;15213:1–9.
 92. Jha SR, Ha HSK, Hickman LD, et al. Frailty in advanced heart failure: a systematic review. *Heart Fail Rev* 2015;20(5):553–60.
 93. Afilalo J. Frailty in Patients with Cardiovascular Disease: Why, When, and How to Measure. *Curr Cardiovasc Risk Rep* 2011;5(5):467–72.
 94. Afilalo J, Alexander KP, Mack MJ, et al. Frailty assessment in the cardiovascular care of older adults. *J Am Coll Cardiol* 2014;63(8):747–62.
 95. Gorodeski EZ, Goyal P, Hummel SL, et al. Domain Management Approach to Heart Failure in the Geriatric Patient: Present and Future. *J Am Coll Cardiol* 2018;71(17):1921–36.
 96. Kundi H, Wadhera RK, Strom JB, et al. Association of Frailty With 30-Day Outcomes for Acute Myocardial Infarction, Heart Failure, and Pneumonia Among Elderly Adults. *JAMA Cardiol*

2019;02215:1–8.

97. Drost D, Kalf A, Vogtlander N, van Munster BC. High prevalence of frailty in end-stage renal disease. *Int Urol Nephrol* 2016;48(8):1357–62.
98. Chowdhury R, Peel NM, Krosch M, Hubbard RE. Frailty and chronic kidney disease: A systematic review. *Arch Gerontol Geriatr* 2017;68:135–42.
99. Jha SR, Hannu MK, Chang S, et al. The Prevalence and Prognostic Significance of Frailty in Patients with Advanced Heart Failure Referred for Heart Transplantation. *Transplantation*. 2016 Feb;100(2):429–36
100. Kennedy CC, Novotny PJ, LeBrasseur NK, et al. Frailty and Clinical Outcomes in Chronic Obstructive Pulmonary Disease. *Ann Am Thorac Soc*. 2019 Feb;16(2):217–224.
101. Walsh B, Addington-Hall J, Roberts HC, et al. Outcomes after unplanned admission to hospital in older people: ill-defined conditions as potential indicators of the frailty trajectory. *J Am Geriatr Soc* 2012;60(11):2104–9.
102. Hurria A, Togawa K, Mohile SG, et al. Predicting chemotherapy toxicity in older adults with cancer: a prospective multicentre study. *J Clin Oncol* 2011;29(25):3457–65.
103. Quoix E, Zalcman G, Oster JP, et al. Carboplatin and weekly paclitaxel doublet chemotherapy compared with monotherapy in elderly patients with advanced non-small-cell lung cancer: IFCT-0501 randomised, phase 3 trial. *Lancet* 2011;378:1079–88.
104. Brown JC, Harhay MO, Harhay MN. The Prognostic Importance of Frailty in Cancer Survivors. *J Am Geriatr Soc* 2015 Dec;63(12):2538–2543.
105. Hamaker ME, Jonker JM, de Rooij SE, et al. Frailty screening methods for predicting outcome of a comprehensive geriatric assessment in elderly patients with cancer: a systematic review. *Lancet Oncol* 2012;13(10):e437–44.
106. Rockwood K, Theou O, Mitnitski A. What are frailty instruments for? *Age Ageing* 2015;44(March):545–7.ss=1
107. Warnier RMJ, van Rossum E, van Velthuisen E, et al. Validity, reliability and feasibility of tools to identify frail older patients in inpatient hospital care: A systematic review. *J Nutr Health Aging*. 2016 Feb;20(2):218–30.
108. Santos-Eggimann B, Sirven N. Screening for frailty: Older populations and older individuals. *Public Health Rev* 2016;37(1):1–16.
109. Dent E, Kowal P, Hoogendijk EO. Frailty measurement in research and clinical practice: A review. *Eur J Intern Med* 2016 Jun;31:3–10.
110. Reynaud C, Mb Y, Bao B, et al. Frailty : What does it mean for Clinical Care Provision ? A Common Operationalisation of Frailty: The Frailty Phenotype. 2014;3(1):54–64.
111. Romera-Liebana L, Orfila F, Segura JM, et al. Effects of a Primary Care-Based Multifactorial Intervention on Physical and Cognitive Function in Frail, Elderly Individuals: A Randomized Controlled Trial. *J Gerontol A Biol Sci Med Sci* 2018 Nov 10;73(12):1688–1674.
112. Inzitari M, Mónica L, Enfedaque MB, et al. Integrated primary and geriatric care for frail older adults in the community: Implementation of a complex intervention into real life. *Eur J Intern Med*. 2018 Oct;56:57–63.
113. Ferrara MC, Pérez LM, Sole AR, et al. Sustained improvement of intrinsic capacity in community-dwelling older adults: The +AGIL Barcelona multidomain programme. *J Intern Med* 2023;294(6):730–42.
114. Blay C, Burdoy E, Limón E. Monografies CAAPS: Abordatge del pacient amb fragilitat i cronicitat complexa. Barcelona: Catalan Society of Family and Community Medicine; 2015. Accessible at: <https://www.camfic.cat/detallActivitat.aspx?id=6385>
115. Vellas B, Balardy L, Gillette-Guyonnet S, et al. Looking for Frailty in Community-Dwelling Older Persons: The Gérontopôle Frailty Screening Tool (GFST). *J Nutr Health Aging* 2013;17:629–31.
116. Morley JE, Malmstrom TK, Miller DK. A simple frailty questionnaire (FRAIL) predicts outcomes in middle aged African Americans. *J Nutr Heal Aging* 2012;16(7):601–8.
117. Dorner TE, Luger E, Tschinderle J, et al. Association between nutritional status (MNA??-SF) and frailty (SHARE-FI) in acute hospitalised elderly patients. *J Nutr Heal Aging* 2014;18(3):264–9.
118. Theou O, Brothers TD, Mitnitski A, Rockwood K. Operationalization of frailty using eight commonly used scales and comparison of their ability to predict all-cause mortality. *J Am Geriatr Soc*

- 2013;61(9):1537–51.
119. Edmans J, Bradshaw L, Gladman JRF, et al. The Identification of Seniors at Risk (ISAR) score to predict clinical outcomes and health service costs in older people discharged from UK acute medical units. *Age Ageing* 2013;42(6):747–53.
 120. Sutton JL, Gould RL, Daley S, et al. Psychometric properties of multicomponent tools designed to assess frailty in older adults: A systematic review. *BMC Geriatr* 2016;16(1).
 121. Pavasini R, Guralnik J, Brown JC, et al. Short Physical Performance Battery and all-cause mortality: Systematic review and meta-analysis. *BMC Med.* 2016 Dec 22;14(1):215.
 122. Bischoff HA, Stähelin HB, Monsch AU, et al. Identifying a cut-off point for normal mobility: A comparison of the timed “up and go” test in community-dwelling and institutionalised elderly women. *Age Ageing.* 2003 May;32(3):315–20.
 123. Sayol Carol M, Bajo Peñas L, Boix Sala L, et al. Aplicabilidad y limitaciones de las pruebas de ejecución funcional en el cribado de fragilidad al alta de un centro de atención intermedia. *Rev Esp Geriatr Gerontol* 2020;55(4):212–215.
 124. Clegg, A., Bates, C., Young, J., et al. Development and validation of an electronic frailty index using existing primary care health record data. *Age Ageing* 2016 May;45(3):353–60.
 125. Orfila F, Ribelles LAC, Abellana R, et al. Validation of an electronic frailty index with electronic health records : eFRAGICAP index. 2022;1–10.
 126. Serra-prat M, Lavado À, Cabré M, et al. Development and validation of the electronic screening index of frailty. *BMC Geriatr.* 2022 May 7;22(1):404.
 127. Velazquez-Diaz D, Arco JE, Ortiz A, et al. Use of Artificial Intelligence in the Identification and Diagnosis of Frailty Syndrome in Older Adults: Scoping Review. *J Med Internet Res.* 2023 Oct 20;25:e47346.
 128. Lacas A, Rockwood K. Frailty in primary care: A review of its conceptualization and implications for practice. *BMC Med.* 2012 Jan 11;10:4.
 129. Dent E, Martin FC, Bergman H, et al. Management of frailty: opportunities, challenges, and future directions. *Lancet* 2019;394(10206):1376–86.
 130. Drubbel I, Numans ME, Kranenburg G, et al. Screening for frailty in primary care: A systematic review of the psychometric properties of the frailty index in community-dwelling older people. *BMC Geriatr.* 2014 Mar 6;14:27.
 131. Tarazona-Santabalbina FJ, Gómez-Cabrera MC, Pérez-Ros P, et al. A Multicomponent Exercise Intervention that Reverses Frailty and Improves Cognition, Emotion, and Social Networking in the Community-Dwelling Frail Elderly: A Randomized Clinical Trial. *J Am Med Dir Assoc* 2016 May 1;17(5):426–33.
 132. Hanlon P, Fauré I, Corcoran N, et al. Frailty measurement, prevalence, incidence, and clinical implications in people with diabetes: a systematic review and study-level meta-analysis. *Lancet Healthy Longev.* 2020 Dec;1(3):e106–e116.
 133. Martínez-Velilla N, Herce PA, Herrero ÁC, et al. Heterogeneity of Different Tools for Detecting the Prevalence of Frailty in Nursing Homes: Feasibility and Meaning of Different Approaches. *J Am Med Dir Assoc.* 2017 Oct 1;18(10):898.e1–898.e8.
 134. Gill TM, Gahbauer EA, Han L, Allore HG. The relationship between intervening hospitalizations and transitions between frailty states. *Journals Gerontol - Ser A Biol Sci Med Sci* 2011;66 A(11):1238–43.
 135. Cesari M, Franchi C, Cortesi L, et al. Implementation of the Frailty Index in hospitalized older patients: Results from the REPOSI register. *Eur J Intern Med* 2018;56(June):11–8.
 136. Joosten E, Demuynck M, Detroyer E, Milisen K. Prevalence of frailty and its ability to predict in hospital delirium, falls, and 6-month mortality in hospitalized older patients. *BMC Geriatr.* 2014 Jan 6;14:1.
 137. Cosco TD, Best J, Davis D, et al. What is the relationship between validated frailty scores and mortality for adults with COVID-19 in acute hospital care ? A systematic review. *Age Ageing* 2021;50(January):608–16.
 138. Jørgensen R, Brabrand M. European Journal of Internal Medicine Screening of the frail patient in the emergency department : A systematic review. *Eur J Intern Med* 2017;9–11.
 139. Ellis G, Whitehead M a, Robinson D, O’Neill D, Langhorne P. Comprehensive geriatric assessment for older adults admitted to hospital: meta-analysis of randomised controlled trials. *BMJ* 2011;343:d6553.
 140. Morley JE, Little MO, Berg-Weger M. Rapid Geriatric Assessment: A Tool for Primary Care Physicians. *J*

- Am Med Dir Assoc 2017;18(3):195–9.
141. Hutchinson AM, Milke DL, Maisey S, et al. The Resident Assessment Instrument-Minimum Data Set 2. Psychiatr Nurses Assoc 2012;18:1472–6963.
 142. Clegg, A., Bates, C., Young, J., et al. Development and validation of an electronic frailty index using existing primary care health record data. *Age Ageing* 2016;0:1–8.
 143. Amblàs-Novellas J, Martori JC, Espauella J, et al. Frail-VIG index: a concise frailty evaluation tool for rapid geriatric assessment. *BMC Geriatr* 2018;18(1):29.
 144. Romero-Ortuno R, Kenny RA. The frailty index in Europeans: association with age and mortality. *Age Ageing* 2012;41(5):684–9.
 145. Drubbel I, de Wit NJ, Bleijenberg N, et al. Prediction of adverse health outcomes in older people using a frailty index based on routine primary care data. *J Gerontol A Biol Sci Med Sci* 2013;68(3):301–8.
 146. Romero Ortuño R. The Frailty Instrument for primary care of the Survey of Health, Ageing and Retirement in Europe (SHARE-FI): results of the Spanish sample. *Rev Esp Geriatr Gerontol* 2011;46(5):243–9.
 147. Malmstrom TK, Miller DK, Morley JE. A comparison of four frailty models. *J Am Geriatr Soc* 2014;62:721–6.
 148. Rockwood K, Mitnitski AB, MacKnight C. Some mathematical models of frailty and their clinical implications. *Rev Clin Gerontol* 2002;12(02):109–17.
 149. Mitnitski AB, Song X, Rockwood K. The estimation of relative fitness and frailty in community-dwelling older adults using self-report data. *J Gerontol A Biol Sci Med Sci* 2004;59(6):M627–32.
 150. Mitnitski AB, Graham JE, Mogilner AJ, Rockwood K. Frailty, fitness and late-life mortality in relation to chronological and biological age. *BMC Geriatr* 2002;2:1.
 151. Mitnitski AB, Mogilner AJ, MacKnight C, Rockwood K. The mortality rate as a function of accumulated deficits in a frailty index. *Mech Ageing Dev* 2002;123(11):1457–60.
 152. Shi J, Song X, Yu P, et al. Analysis of frailty and survival from late middle age in the Beijing Longitudinal Study of Aging. *BMC Geriatr* 2011;11(1):17.
 153. Amblàs-Novellas J, Martori J, Molist Brunet N, et al. Índice Frágil-VIG: diseño y evaluación de un Índice de Fragilidad basado en la Valoración Integral Geriátrica. *Rev Esp Geriatr Gerontol* 2016;52(3):119–23.
 154. Church S, Rogers E, Rockwood K, Theou O. A scoping review of the Clinical Frailty Scale. *BMC Geriatr*. 2020 Oct 7;20(1):393.
 155. Surkan M, Rajabali N, Bagshaw SM, et al. Interrater Reliability of the Clinical Frailty Scale by Geriatrician and Intensivist in Patients Admitted to the Intensive Care Unit. *Can Geriatr J*. 2020 Sep 1;23(3):235-241.
 156. Izquierdo M, Duque G, Morley JE. Physical activity guidelines for older people: knowledge gaps and future directions. *Lancet Heal Longev* 2021;2(6):e380–3.
 157. Trombetti A, Hars M, Hsu FC, et al. Effect of physical activity on frailty: Secondary analysis of a randomized controlled trial. *Ann Intern Med* 2018;168(5):309–16.
 158. Rodríguez-Mañas L, Laosa O, Vellas B, et al. Effectiveness of a multimodal intervention in functionally impaired older people with type 2 diabetes mellitus. *J Cachexia Sarcopenia Muscle* 2019;10(4):721–33.
 159. Izquierdo M, Martínez-Velilla N, Casas-Herrero A, et al. Effect of Exercise Intervention on Functional Decline in Very Elderly Patients During Acute Hospitalization: A Randomized Clinical Trial. *JAMA Intern Med*. 2019 Jan 1;179(1):28-36.
 160. Jadcak AD, Makwana N, Luscombe-Marsh N, Visvanathan R ST. Effectiveness of exercise interventions on physical function in community-dwelling frail older people: an umbrella review of systematic reviews. *JBI Database Syst Rev Implement Rep* 2018;16(3):752–75.
 161. Suikkanen S, Soukkio P, Aartolahti E, et al. Effect of 12-Month Supervised, Home-Based Physical Exercise on Functioning Among Persons With Signs of Frailty: A Randomized Controlled Trial. *Arch Phys Med Rehabil* 2021;102(12):2283–90.
 162. Cadore EL, Rodríguez-Mañas L, Sinclair A, Izquierdo M. Effects of different exercise interventions on risk of falls, gait ability, and balance in physically frail older adults: A systematic review. *Rejuvenation Res* 2013;16(2):105–14.
 163. Hengeveld LM, Wijnhoven HAH, Olthof MR, et al. Prospective Associations of Diet Quality With

- Incident Frailty in Older Adults: The Health, Aging, and Body Composition Study. *J Am Geriatr Soc* 2019;67(9):1835–42.
164. Ghosh TS, Rampelli S, Jeffery IB, et al. Mediterranean diet intervention alters the gut microbiome in older people reducing frailty and improving health status: The NU-AGE 1-year dietary intervention across five European countries. *Gut* 2020;69(7):1218–28.
 165. Kojima G, Avgerinou C, Iliffe S WK. Adherence to Mediterranean Diet Reduces Incident Frailty Risk: Systematic Review and Meta-Analysis. *J Am Geriatr Soc* 2018;66(4):783–8.
 166. Mendonça N, Hengeveld LM, Presse N, et al. Low Protein intake, physical activity and grip strength in European and North American community-dwelling older adults: a pooled analysis of individual participant data from four longitudinal ageing cohorts. *Br J Nutr* 2022;(10):29–41.
 167. Lorenzo-López L, Maseda A, De Labra C, Regueiro-Folgueira L, Rodríguez-Villamil JL, Millán-Calenti JC. Nutritional determinants of frailty in older adults: A systematic review. *BMC Geriatr* 2017;17(1):1–13.
 168. Rodríguez-Artalejo F, Guallar-Castillón P, Martínez-González MÀ BM. Rationale of the association between Mediterranean diet and the risk of frailty in older adults and systematic review and meta-analysis. *Exp Gerontol* 2023;15(177):112180.
 169. Volkert D, Beck AM, Cederholm T, et al. ESPEN practical guideline: Clinical nutrition and hydration in geriatrics. *Clin Nutr* 2022;41(4):958–89.
 170. Bruyère O, Cavalier E, Buckinx F RJ. Relevance of vitamin D in the pathogenesis and therapy of frailty. *Curr Opin Clin Nutr Metab Care* 2017;20(1):26–9.
 171. Marcos-Pérez D, Sánchez-Flores M, Proietti S, et al. Low vitamin d levels and frailty status in older adults: A systematic review and meta-analysis. *Nutrients* 2020;12(8):1–20.
 172. Palmer K, Vetrano DL, Marengoni A, et al. The Relationship between Anaemia and Frailty: A Systematic Review and Meta-analysis. *J Nutr Heal Aging* 2018;22(8):965–74.
 173. Hung C Di, Yang CC, Lee CY, et al. Polypharmacy is significantly and positively associated with the frailty status assessed using the 5-item frail scale, cardiovascular health phenotypic classification of frailty index, and study of osteoporotic fractures scale. *J Clin Med* 2021;10(19):4–13.
 174. Saeed D, Carter G, Parsons C. Interventions to improve medicines optimisation in frail older patients in secondary and acute care settings: a systematic review of randomised controlled trials and non-randomised studies. *Int J Clin Pharm* 2022;44(1):15–26.
 175. Ibrahim K, Cox NJ, Stevenson JM, et al. A systematic review of the evidence for deprescribing interventions among older people living with frailty. *BMC Geriatr* 2021;21(1):1–16.
 176. O'Mahony D, Cherubini A, Guiteras AR, et al. STOPP/START criteria for potentially inappropriate prescribing in older people: version 3. *Eur Geriatr Med* 2023;14(4):625–32.
 177. Yu R, Leung G, Woo J. Randomized controlled trial on the effects of a combined intervention of computerized cognitive training preceded by physical exercise for improving frailty status and cognitive function in older adults. *Int J Environ Res Public Health* 2021;18(4):1–14.
 178. Yi Q, Liu Z, Zhong F, Selvanayagam VS, Cheong JPG. Cognitive and physical impact of combined exercise and cognitive intervention in older adults with mild cognitive impairment: A systematic review and meta-analysis. *PLoS One*. 2024 Oct 3;19(10).
 179. Zheng L, Wang C, Qiu Y, Li X, Zhang X, Zhang M, Ma T, Li G, Chen L. Effectiveness of interventions in older adults with cognitive frailty: a systematic review and meta-analysis of randomised controlled trials. *Age Ageing*. 2022 Dec 5;51(12).
 180. Vaughan L, Corbin AL, Goveas JS. Depression and frailty in later life: a systematic review. *Clin Interv Aging*. 2015 Dec 15;10:1947–58.
 181. Ng TP, Nyunt MSZ, Feng L, et al. Multi-Domains Lifestyle Interventions Reduces Depressive Symptoms among Frail and Pre-Frail Older Persons: Randomized Controlled Trial. *J Nutr Heal Aging* 2017;21(8):918–26.
 182. Orgeta V, Leung P, Del-Pino-Casado R, Qazi A, Orrell M, Spector AE, Methley AM. Psychological treatments for depression and anxiety in dementia and mild cognitive impairment. *Cochrane Database Syst Rev*. 2022 Apr 25;4(4):CD009125.
 183. Liu H, Topping A, Guo P. Intergenerational engagement with Asian residents in long-term care facilities: a mixed method systematic review. *Front Public Health*. 2024 Jul 16;12.
 184. Bernhardt LK, Vashe A, Bernhardt GV, Pinto J. Animal-assisted intervention for geriatric well-being: A

- comprehensive review. Clin Ter. 2024 Sep-Oct;175(5):362-369.
185. Hoogendijk EO, Suanet B, Dent E, Deeg DJ AM. Adverse effects of frailty on social functioning in older adults: Results from the Longitudinal Aging Study Amsterdam. Maturitas 2016;Jan(83):45–50.
186. Ožić S, Vasiljev V, Ivković V, et al. Interventions aimed at loneliness and fall prevention reduce frailty in elderly urban population. Medicine (Baltimore). 2020 Feb;99(8):e19145.
187. Royal College of General Practitioners and British Geriatric Society. Fit for frailty, part 2. 2014. Accessible at: https://www.bgs.org.uk/sites/default/files/content/resources/files/2018-05-23/fff2_full.pdf
188. Dent E, Kowal P, Hoogendijk EO. Frailty measurement in research and clinical practice: A review. Eur J Intern Med. 2016 Jun;31:3-10.

7. Appendices

Appendix 1. Perspectives from older adults and professionals

Objectives and methodology

In 2015, the UAB Health and Ageing Foundation coordinated a metaforum with 55 participants to **gather insights from citizens and professionals** on the concept of **frailty** and approaches to addressing it, with a particular focus on disability prevention. The input from this forum has been integrated into this foundational document and should inform future strategic and operational planning.

As part of the consensus process, **four discussion groups** were formed: two consisting of older adults, one of professionals involved in community interventions, and one of professionals from Primary Healthcare (PHC). Participants included experts from primary care, geriatrics, and public health, representing various scientific societies, alongside community programme managers and institutional representatives. The list of metaforum participants is available in Appendix 1.

Areas of work

The discussion groups addressed **six key questions or themes**:

- Insights on the concept of frailty.
- Expectations and preferences for social and healthcare services for frail individuals.
- Professional suggestions for frailty prevention strategies.
- Challenges in identifying frail individuals.
- Obstacles in the intervention and care process for frail people.
- Recommendations and initiatives to enhance care for frail individuals.

Insights on the concept of frailty

All discussion groups agreed on the significance of the frailty concept, though its definition requires further clarification:

- **Older Adults' Perspectives**: Participants in these groups described frailty as a state of insecurity and weakness, noting that perceptions vary individually and by context, particularly between men and women. They acknowledged frailty's physical, psychological, cognitive, and social dimensions. However, some cautioned against stereotyping, with one stating, "*There's an issue with labelling us as older people; we shouldn't be set apart —we're all the same.*" Others observed, "*Frailty*

exists at every life stage... changes in lifestyle are where you feel most vulnerable..."

They also highlighted the challenge of accepting age-related limitations, with comments like, *"As older adults, we struggle to acknowledge frailty —it's tough for us."* Additionally, they pointed to the need for better preparation for ageing and retirement, noting, *"Some people don't realize what frailty involves."* Frailty is often mistaken for natural ageing, and many overlook preventive measures.

- **Healthcare professionals** noted that frailty often receives little attention: *"We rarely discuss frailty among professionals."* This contributes to a lack of proactivity and screening strategies, largely due to limited knowledge. Some Primary Healthcare (PHC) professionals acknowledged this gap but expressed scepticism about screening without clear follow-up options, asking, *"Where do I refer them? I can identify them, but then what?"* They also highlighted a shortage of resources for preventive interventions, emphasizing that frailty should be recognized as a genuine health issue. Often, action is only taken at a family member's prompting. **Social professionals** involved in community intervention programmes described challenges in defining frailty. They find it hard to identify in older adults, as age itself is often equated with frailty. They stressed the importance of including social (e.g., loneliness, isolation) and emotional risk factors in the definition. They view frailty as a multidimensional clinical entity requiring assessment of its social context. They also see it as a potential predictive tool. They suggested that frailty could be applied to individuals unknown to professionals, using specific criteria to prevent disability risk. However, they emphasized that preventing this risk and ensuring effective support demands strong involvement from all stakeholders connected to the individual, alongside better coordination with other agents, which is currently lacking.

Expectations and preferences in social and healthcare for vulnerable people (older adults' groups only)

Participants emphasized a shift in focus from illness to health, advocating for the promotion of active ageing. They highlighted the importance of education in schools and equipping older adults with skills to use new technologies.

Regarding social and healthcare for frail individuals, they viewed **empowerment** —through adequate information and training on active ageing— as equally critical as **specific measures**, including:

- Greater structure in prescribing physical exercise
- Proactive, future-oriented home care
- Enhanced communication between health and social services
- Coordination among professionals and interdisciplinary collaboration
- Support throughout the process, with a particular focus on combating loneliness
- A supportive, collaborative environment involving family and caregivers

On community-related aspects, they suggested providing information, fostering neighbourhood networks, encouraging social productivity, and promoting volunteering. They also called for increased societal awareness of frailty and facilitating active participation through tools like the community health and social assets map.

Professional suggestions for frailty prevention strategies

Healthcare professionals stress the need to grasp the concept of frailty and clarify what it entails. They advocate for raising awareness among professionals about its significance, while cautioning against automatically associating it with persons with disabilities (PWD). They also highlight the value of networking —across community, social, and healthcare domains— and equipping professionals with tools to implement the care model effectively.

Social professionals underscore the importance of collaboration across sectors for frailty detection, stating, "*Everyone is a health agent and detector. We need to build synergies.*" They propose designating a professional to serve as a "*link*" and central coordinator. Additionally, they emphasize the need to provide professionals and involved individuals with tools, resources, and motivation to enable detection, which would facilitate "accompaniment" and follow-up. They suggest developing a preliminary programme to integrate those identified as frail in a tailored manner.

Challenges in identifying frail individuals

- **Older adults'** participating in the metaforum listed the following barriers:
 - Professionals prioritizing illness over health.
 - Insufficient public information about available resources or services (e.g., via ICT, 061 helpline).
 - Unequal access to services and poor coordination.
 - Limited resources.
 - Resistance from frail individuals to acknowledge their own frailty.
 - Low awareness of frailty risks.
 - Challenges in differentiating normal ageing from frailty.
 - Misuse of primary care services.
 - Individuals who avoid visiting health centres.
 - General communication breakdowns (between person, family, and professionals).
- **Professionals'** highlighted the following contributions to the definition of barriers in identifying frail older adults:
 - Lack of a unified definition of frailty. Ensuring everyone interprets frailty consistently.
 - Ambiguity surrounding frailty diagnosis boundaries.
 - Labelling someone as "frail" without a clear prevention strategy.
 - Viewing the patient not as inherently frail but as experiencing a frail situation.

- Difficulty reaching those who do not engage with the social, health, or community systems.
- Concerns about the impact of a negative "frailty" label on the individual's perception.

Obstacles in the intervention and care process for frail people

- **Older adults'** highlighted self-acceptance —or more specifically, **the conflation of ageing with frailty** and the reluctance to acknowledge age-related functional decline— as a significant barrier to intervention. They also pointed to **inadequate accessibility and poor coordination** between care sectors as major obstacles. Personal factors tied to their environment, such as loneliness, were noted as additional barriers. Further concerns included the **infantilization of older adults** in their treatment, **frequent turnover of professional contacts**, a **lack of tools** to support individuals with functional diversity, and insufficient retraining or **training** for administrative staff to better assist individuals and their families.
- **Healthcare professionals** emphasized challenges such as the **time** required for assessments, a **lack of commitment**, and a tendency to follow trends without conviction. They also noted insufficient resources or clear models for post-diagnosis intervention, often questioning, *"And after identification, what next?"* Additional barriers include **poor integration** across health, social, and community systems, as well as within the health system itself, resulting in limited feedback between hospital and primary care. Territorial disparities and debates over *"who is responsible for frailty?"* further underscore the need for a cohesive, cross-cutting approach to frailty management. **Social professionals'** pointed to a **lack of motivation and awareness** among both professionals and individuals, coupled with **inadequate funding**. They stressed the need to raise awareness of the social and health resource map and address isolation and unequal access to resources.

Recommendations and initiatives to enhance care for frail individuals

- **Older adults'** offered the following suggestions for enhancing care to prevent dependency:
 - Promote policies for active ageing.
 - Ensure continuity with a consistent reference professional.
 - Enhance communication: through clear, concise information and training (for health professionals, social actors, and via ICT), improved coordination between health and social sectors, and access to an expert professional or dedicated team.
 - Encourage self-responsibility (balancing rights and duties) and active participation of the individual, their family, and their environment.
 - Restructure services to deliver timely and appropriate care for frail older adults.
 - Establish multidisciplinary health teams that include families as integral members.

- Provide ongoing accompaniment for the individual.
 - Offer education on healthy lifestyle habits and efforts to reduce loneliness.
 - Raise awareness of community activities and resources.
 - Foster social networks and encourage volunteering.
- **Professionals** put forward the following suggestions:
 - Foster networking and shared responsibility. A clear definition of leadership roles.
 - Shift the model of the professional-patient relationship.
 - Enhance professional recognition: including autonomy and flexibility.
 - Adopt a holistic, global perspective.
 - Engage other departments and administrative bodies.
 - Launch awareness campaigns about frailty.
 - Reframe frailty as a positive and empowering concept.
 - Establish training groups within centres, led by a peer facilitator, to share knowledge collaboratively.
 - Encourage volunteering among the broader population and acknowledge its value as a meaningful contribution.

List of participants in the metaforum

These are the participants in the metaforum that took place in 2015. The affiliation corresponds to what they had at the time of the activity.

○ Ainhoa Morón	Red Cross
○ Anna Lorda Peralta	EAP Besòs
○ Anna Vila	Ministry of Labor, Social Affairs and Family
○ Cristina Casanovas Guitart	Co-director of ENAPISC. Ministry of Health.
○ Cristina Fabregat	PAMEM
○ Blanca Roncales	FATEC
○ Marta Torruella	PAMEM
○ Elisenda de la Torre	Rheumatology League (MA)
○ Enrique Lailla	PCE-CAT®
○ Esther García Egido	Poble Sec Community Plan
○ Eva Galofré Pla	Poble Sec Community Plan
○ Fina Male Sola	PCE-CAT®
○ Francesca Rivera Fillat	FATEC
○ Gemma Cassi	–Obra Social “La Caixa”– Elderly Programme
○ Jesús Ferrer Escrigas	PPE-CAT® / PE EAP Mollet
○ Jesús Vaquero Cruzado	EAP Gavarra. MS
○ Joan M. Pont	Associació Temps Lliure
○ Jordi Gorriz	FATEC
○ Josep Carné	FATEC
○ Josep Cayuelas	FATEC
○ Josep Comas	PPE-CAT®/ PE EAP Viladecans

○ Ramon Cortés Busquets	Sports Council of La Selva
○ Lluís Montaña Esteban	MF. EAP Seròs (Lleida)
○ Marc Cadafalch	Fundació Pere Tarrés
○ Marc Sallarés	Pla de l'Estany Sports Council
○ Margarita Budo	University Extension Courses
○ Maria Candelas	CE EAP Sant Martí BCN
○ Maria Rosa Mendes	University Extension Courses
○ Mayte Lluç	Leisure: Sintagma Elderly
○ Mercè Pujol	University Extension Courses
○ Meritxell Feixes	Alt Pirineu i Aran
○ Montse Canet	Girona
○ Núria Martín	EAP Horts de Miró
○ Òscar Autet Vilaró	EBA Vic Sud
○ Pere Jané Galbete	FATEC
○ Raquel Paz Caballero	EAP Sant Martí
○ Rosa Dordal	University Extension Courses
○ Rosa Maria Mendes	University Extension Courses
○ Rosa Monteserín	EBA Sardenya
○ Rosa Pausas Gual	Associació Temps Lliure
○ Sonia Pérez	Badalona Care Services
○ Toni Corrales	–Obra Social “La Caixa”– Elderly Programme
○ Laura Vila	Chronicity prevention and care programme. Min. of Health.
○ Esther Gil	Programa Pacient Expert Catalunya®. PPAC. Min. of Health
○ Paloma Amil	Programa Pacient Expert Catalunya®. PPAC. Min. of Health
○ Assumpció González Mestre	PPAC. Min. of Health. Member of CO PIAISS,
○ Nadja Schlensog	UAB Health and Ageing Foundation
○ Melissa Luque	UAB Health and Ageing Foundation
○ Natalia Angarita	UAB Health and Ageing Foundation
○ Concepció Cabanes	Socio-healthcare master plan. Ministry of Health
○ Pau Sánchez Ferrin	Socio-healthcare master plan. Ministry of Health
○ Laura Fernández Maldonado	UAB Health and Ageing Foundation
○ Laura Coll Planes	UAB Health and Ageing Foundation
○ Sergi Blancafort	UAB Health and Ageing Foundation
○ Antoni Salvà Casanovas	UAB Health and Ageing Foundation

Appendix 2. Frailty assessment instruments

A. FRAILTY SCREENING INSTRUMENTS

A1. Questionnaires administered by professionals

Gérontopôle Frailty Screening Tool

This tool is intended for the early detection of frailty in community-dwelling older adults and demonstrates strong promise as a frailty screening instrument. It consists of two phases: 1) A questionnaire with three response options (yes / no / unknown) covering six elements: living alone, unintentional weight loss, fatigue, mobility issues, memory difficulties, and slow walking speed (≥ 4 seconds over 4 meters); 2) A subsequent clinical evaluation of the individual's frailty status, guided by the question, "Do you believe your patient is frail?"

Persona de 65 i més anys , autònoms (AVD $\geq 5/6$ o Barthel ≥ 90), sense cap malaltia aguda actual.			
	Sí	No	No ho sé
El seu pacient viu sol ?	☐	☐	☐
El seu pacient ha perdut pes de manera involuntària en els darrers 3 mesos?	☐	☐	☐
El seu pacient es troba més cansat en aquests darrers 3 mesos?	☐	☐	☐
El seu pacient té més dificultats de mobilitat en aquests darrers 3 mesos?	☐	☐	☐
El seu pacient es queixa de problemes de memòria ?	☐	☐	☐
El seu pacient té una velocitat de marxa lenta (més de 4 segons per recórrer 4 metres)?	☐	☐	☐
Si ha contestat Sí a una o més d'aquestes preguntes:			
A vostè li sembla que el seu pacient és fràgil?			
SI ☐			
NO ☐			

Figure 26. Gérontopôle Frailty Screening Tool. Source: Adapted from <http://frailty.net/frailty-toolkit/diagnostic-tools/looking-for-frailty-in-community-dwelling-older-persons-the-gerontopole-frailty-screening-tool-gfst-2/>

SHARE-FI

The Share-FI is a frailty screening tool developed from the European SHARE (Survey of Health, Ageing and Retirement in Europe) cohort, adapting Fried's original criteria.

Edmonton Frailty Scale

The Edmonton Frailty Scale comprises 17 items across 9 domains: cognition, general health status, self-reported health, functional independence, social support, polypharmacy,

mood, continence, and functional performance. Total scores classify individuals by frailty level: not frail (0-5), apparently vulnerable (6-7), mild frailty (8-9), moderate frailty (10-11), or severe frailty (12-17).

Identification of Seniors at Risk (ISAR)

The ISAR features six straightforward yes/no questions addressing functional dependence, recent hospitalization, cognition, vision, and polypharmacy¹¹⁹.

It is likely the most evidence-supported frailty screening tool for emergency settings, though its predictive accuracy for outcomes like mortality, institutionalization, readmission, resource use, and physical or cognitive decline is moderate.

A2. Self-reported questionnaires

FRAIL Questionnaire

The FRAIL questionnaire covers an acronym for Fatigue, Resistance, Ambulation, Illnesses, and Loss of Weight¹¹⁶. It consists of five straightforward questions tied to these domains:

- **Fatigue:** *"Have you felt fatigued or tired most of the time over the past month?"*
- **Resistance:** *"Do you struggle to climb 10 steps without assistance or resting?"*
- **Ambulation:** *"Do you find it difficult to walk several hundred meters without help?"*
- **Illnesses:** *"Has a doctor ever diagnosed you with any of these conditions: hypertension, diabetes, cancer, chronic lung disease, heart disease, congestive heart failure, angina, asthma, arthritis, stroke, or kidney disease?"*
- **Loss of weight:** *"Have you lost more than 5% of your body weight in the past year?"*

Each limitation scores 1 point. A total of 3-5 points classifies an individual as frail, while 1-2 points indicates pre-frailty (aligned with Fried's criteria). This validated tool is clinically valuable due to its simplicity and predictive power for mortality in certain groups. It can be self-completed by individuals or administered by professionals.

PRISMA-7

The PRISMA-7 questionnaire consists of 7 simple self-reported items¹⁸⁸: age (over 85 years); sex (male); health problems that limit activities; need for support from another person; health problems that prevent leaving the house; need for social support; and use of a cane/walker/wheelchair. Each component is scored with a 'yes/no' answer, and a person is considered to be frail if they obtain a total score ≥ 3 .

The PRISMA-7 has demonstrated a good capacity for identifying frailty in older people living in the community, but with a tendency towards excessive detection of frailty, which limits its capacity as a screening tool.

Tilburg Frailty Indicator

Developed in the Netherlands, this self-administered questionnaire includes 15 items covering multiple dimensions: physical aspects (self-rated health, weight loss, walking difficulties, balance, hearing, vision, strength, and fatigue), psychological factors (memory, low mood, anxiety, and well-being), and social components (living alone, social isolation, and social support). A score of 5 or higher indicates frailty.

This tool has been thoroughly assessed across nearly all psychometric domains, demonstrating strong validity and reliability, along with robust predictive ability for adverse outcomes, particularly tied to its physical components.

Groningen Frailty Indicator

This frailty screening tool, also originating from the Netherlands, offers moderate internal consistency and sufficient discriminatory power. It comprises 15 self-reported yes/no items spanning: physical factors (independence in shopping, walking, dressing, toileting, physical fitness, vision, hearing, weight loss, and polypharmacy), a cognitive element (memory issues), social aspects (feelings of emptiness, missing others, or abandonment), and a psychological dimension (feeling down or sad, nervous, or anxious). The score is presented as a continuous variable, ranging from 0 (indicating normal, unrestricted activity) to 15 (suggesting complete dependence), with a frailty threshold at scores of 4 or higher.

The tool demonstrates good feasibility and reliability as a frailty indicator in the Netherlands, though further cross-cultural validation studies are needed.

Sherbrooke Postal Questionnaire

The Sherbrooke Postal Questionnaire features six yes/no questions addressing: living alone, use of three or more medications, mobility, vision, hearing, and memory issues. Scores are summed, with a total of 2 or higher indicating frailty.

Compared to the tools mentioned earlier, this instrument exhibits inconsistent validity for identifying frailty.

A3. Physical performance tests

Short Physical Performance Battery (SPPB) or Guralnik Test

This assessment consists of three consecutive tests evaluating balance, walking speed, and lower limb strength.

Short Physical Performance Battery

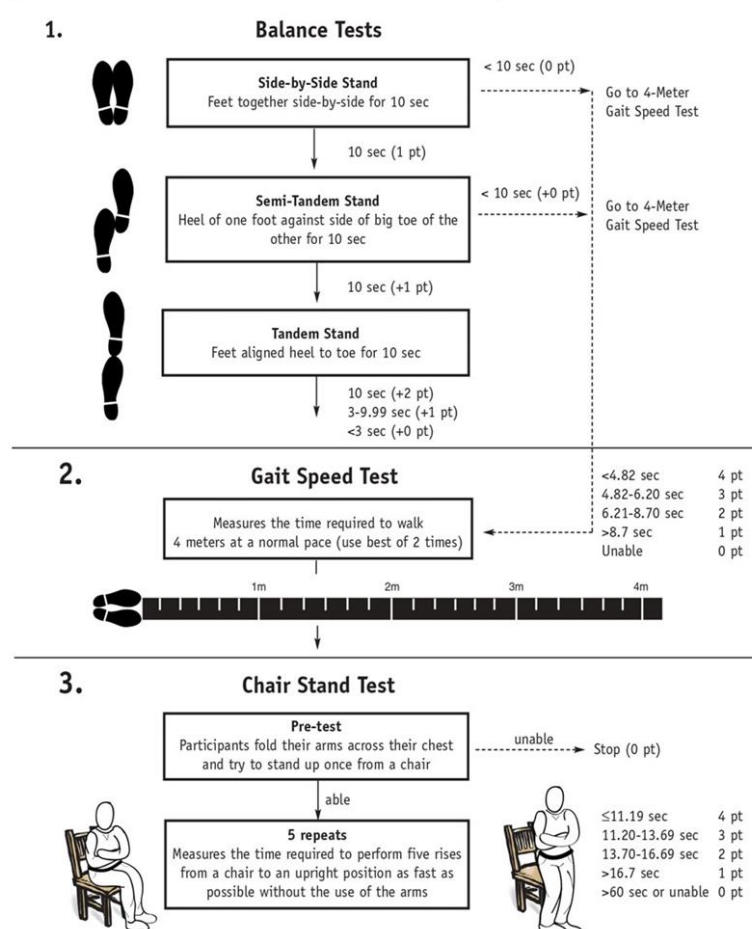


Figure 27. Short Physical Performance Battery (SPPB). Adapted from Pavasini et al, 121

A score is assigned based on the time taken to complete each test if successful; if the individual cannot perform it, a score of zero is given, and the next test begins. For balance tests, the person must stand without aids like canes or walkers, though they may use their usual technical aids for the gait speed assessment. Frailty is indicated by an SPPB score below 10 points.

Originally developed to predict disability, this test also forecasts other adverse outcomes, such as institutionalization and mortality. It enables tracking of an individual's progress over time and is a strong predictor of dependency in both daily activities and mobility.

Timed, Up & Go (TUG)

For the TUG test, the individual starts seated in a stable chair with armrests, back against the backrest, feet flat on the floor, and arms resting on the armrests. If they typically use mobility aids, these should be available. At the professional's signal, the person stands, walks three meters at their normal pace, turns, returns to the chair, and sits back down. A practice run is conducted first to familiarize them with the process, followed by a timed attempt. Timing begins when the professional instructs the person to stand and ends when

they are fully seated again with their back against the backrest. While cut-off points lack universal agreement, a time of 10-12 seconds is generally considered indicative of pre-frailty, and 20 seconds suggests frailty.

Originally developed to measure mobility, the TUG also predicts declines in health status, daily activities, and fall risk, and has been validated as a frailty diagnostic tool.

Gait speed

Gait speed (GS) is typically assessed by having the individual walk a set distance at their comfortable, usual pace. The distance should be practical for a clinical setting —while studies have used ranges from 3 to 10 meters, 4 meters is widely accepted as sufficient for reliable results and is the currently recommended standard. The test should ideally be repeated four times, with the best time recorded. A cut-off of 0.8 m/s is considered the strongest predictor of frailty, with slower speeds strongly indicating its presence.

This test is likely the most commonly cited objective measure of functional performance in research. It is well-received by both professionals and patients, easy to administer, and has proven predictive value for hospitalization, frailty, falls, dependency, and mortality — though it is less robust than the Short Physical Performance Battery (SPPB). Gait speed is a component of Fried's frailty phenotype and is also included in the SPPB.

Hand grip strength

Hand grip strength measures isometric strength using a dynamometer, and is affected by several variables such as: the type of dynamometer, grip position (guided by manufacturer recommendations), the hand tested, body and arm posture, and the number of attempts.

To assess maximum grip strength, multiple trials (typically 2 to 4) are conducted, with the highest value recorded. For determining muscle weakness, the ideal reference is a young local population; if unavailable, weakness is defined as a maximum grip strength of ≤ 30 kg for men or ≤ 20 kg for women.

This measure is strongly linked to sarcopenia, disability, nutritional status, and mortality.

A4. Frailty screening using information systems

Electronic Frailty Index (eFI)

Developed by Clegg et al., the eFI is grounded in the Frailty Index framework (utilizing 36 deficits) and was created using a UK primary healthcare database of nearly 1 million individuals aged 65-95. It categorizes people into four groups — robust, mildly frail, moderately frail, and severely frail— and has demonstrated predictive power for mortality, hospital admissions, and institutionalization at 1, 3, and 5-year intervals.

Now a standard tool in the UK's National Health Service (NHS), the eFI has had a significant impact. However, its broad adoption has led to challenges, notably over-identification of frail individuals. This stems from its proactive (rather than opportunistic) screening approach and high sensitivity (which increases detection of frailty), paired with low specificity (due to difficulties in keeping coding current with each individual's specific circumstances).

In Catalonia, an adapted and validated version, eFRAGICAP, has been developed¹²⁵.

B. INSTRUMENTS FOR QUANTIFYING FRAILTY LEVELS

B1. Frailty Indices

Frailty Indices (FIs) mirror the multidimensional approach of the Comprehensive Geriatric Assessment (CGA)—essentially, an FI is a quantified CGA—. They are calculated as a ratio of the deficits or health issues an individual has accumulated compared to a predefined list of potential deficits.

In 2001, Rockwood and Mitnitski introduced an initial FI with 92 items, based on a 5-year follow-up of the Canadian Study of Health and Aging (CSHA) cohort—later streamlined to 40 items—. Other FI have been proposed, showing minor differences in content, feasibility, and mortality prediction but consistently proving robust across diverse populations. Since then, multiple FIs have been published that vary primarily in the number and origin of deficit data: some draw from comprehensive geriatric assessments (e.g., CGA-FI or Frail Index-VIG), others from routine electronic medical records (e.g., the Electronic Frailty Index—eFI—), laboratory results (FI-LAB), or are tailored to specific conditions or diseases (e.g., HIV).

B2. Clinical frailty scales

These scales rely on clinical judgment and expert evaluation to visually categorize individuals based on their frailty level. The Clinical Frailty Scale© —the most widely recognized among them and developed from the CSHA—, assigns scores from 1 to 9¹⁵⁴.

1		ESTAT DE SALUT ÒPTIM : Persones sanes, actives, enèrgiques i motivades. Fan exercici regularment . Presenten millor estat general que la gent de la seva edat.
2		BON ESTAT DE SALUT : Persones que no tenen símptomes de malaltia activa però l'estat general és pitjor que la categoria anterior. Fan exercici periòdicament / de forma discontinua .
3		PERSONA AMB BONA AUTONOMIA : Els problemes mèdics estan ben controlats , però no es mostren regularment actives , més enllà de la rutina de caminar.
4		VULNERABLE : Si bé no requereix de l'ajuda d'altres persones, sovint els símptomes limiten les seves activitats. Una queixa comuna és " anar més a poc a poc " i / o estar cansat durant el dia.
5		LLEUGERAMENT FRÀGIL : Sovint fan les accions lentament i necessiten suport en activitats instrumentals de la via diària (<i>finances, transport, treball domèstic pesat, medicaments ...</i>). Generalment, la fragilitat moderada va impedit de forma progressiva anar a comprar, preparar el menjar i realitzar les tasques de la llar
6		MODERADAMENT FRÀGIL : Necessiten ajuda en totes les activitats instrumentals (<i>activitats a l'exterior i maneig de la casa</i>) i algunes bàsiques de la via diària (<i>sovint tenen problemes amb les escales i necessiten ajuda per banyar-se i ajuda amb el vestir</i>).
7		GREUMENT FRÀGIL : Dependent per a la majoria d'activitats bàsiques de la via diària i la cura personal per qualsevol causa (<i>física o cognitiva</i>). Així i tot, semblen estar estables i no tenen un alt risc de morir al llarg dels propers 6 mesos.
8		SEVERAMENT FRÀGIL : Totalment dependent, acostant-se al final de la vida . Per norma general, no poden recuperar-se ni tan sols d'una malaltia menor.
9		SITUACIÓ TERMINAL : Aquesta categoria s'aplica a les persones que aparentment ara no són especialment fràgils , però que tenen una esperança de vida inferior a 6 mesos (habitualment en relació a una malaltia avançada, com el càncer)

Figure 28. Adaptation into Catalan of the CFS. *Source: own elaboration.*

While this tool appears simple and intuitive, it's critical to stress two points: pictograms alone are insufficient (the authors themselves emphasize the importance of the content of the text that accompanies them), and the frailty level should be determined following a Comprehensive Geriatric Assessment (CGA), not as a replacement for it¹⁵⁵.

Appendix 3. Vivifrail Programme

Among the many evidence-based exercise programmes available, the VIVIFRAIL programme stands out prominently. Launched in 2015 as part of the World Health Organization's European Union Strategy for Promoting Health and Quality of Life, it emphasizes exercise promotion for older adults, the adoption of best practices, and the creation of materials to support prescribing exercise as an effective means to enhance health in their local settings. It fosters collaboration across sports, health, and social service sectors.

The program tailors physical exercise plans to each older adult's functional capacity, providing specific guidance on dosage (intensity, volume, and frequency). Functional capacity levels are assessed using the Short Physical Performance Battery (SPPB) and 6-metre gait speed, with corresponding individualized multicomponent exercise programmes (A, B, C, and D) recommended accordingly (see Figures 29 and 30).

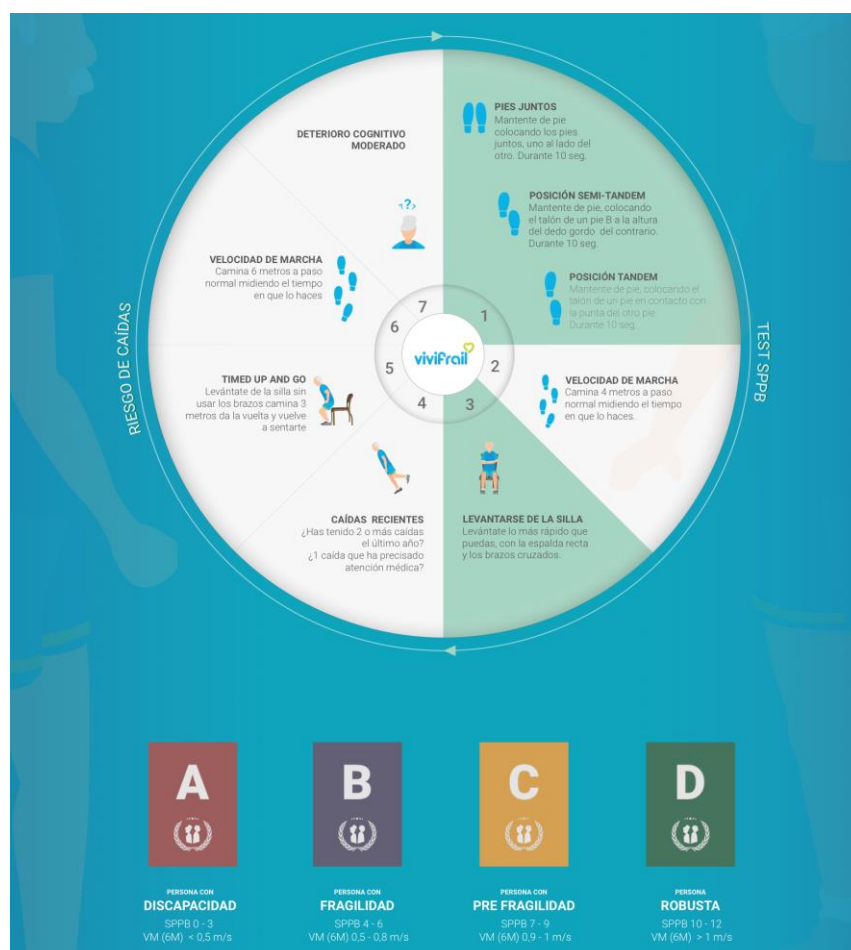


Figure 29. Components of the VIVIFRAIL test and recommended exercise programmes. *Source:* VIVIFRAIL website <http://www.vivifrail.com/es/documentacion>

