International Centre for Allied Health Evidence

University of South Australia

International Centre for Allied Health Evidence

ICAHE

A member of the Sansom Institute

Report 1

Functional decline in community-dwelling older people and the Medicare 75+ Health Assessment

Prepared for:
Australian Primary Health Care Research Institute

Prepared by:
The Review Team
International Centre for Allied Health Evidence
www.unisa.edu.au/cahe
University of South Australia
Adelaide, SA 5000

RESEARCH CENTRE RESPONSIBLE FOR THE PROJECT

International Centre for Allied Health Evidence
School of Health Sciences
City East Campus
University of South Australia
Adelaide
South Australia 5000
Website: www.unisa.edu.au/cahe

Centre Director
Professor Karen Grimmer
Phone: (08) 8302 2769
Fax: (08) 8302 2766
Email: karen.grimmer@unisa.edu.au

Review team
Ms Kate Beaton
Ms Claire McEvoy
Dr Lucylynn Lizarondo
Mr Alvin Atlas

Project administrator
Ms. Madeleine Mallee
Business Services Officer
Business Development Unit
Division of Health Sciences
University of South Australia
Phone: (08) 8302 2121
Fax: (08) 8302 1472
Email: madeleine.mallee@unisa.edu.au

Citation details
The International Centre for Allied Health Evidence (2014) Functional decline in community-dwelling older people and the Medicare 75+ Health Assessment. Technical Report 1. Prepared for the Australian Primary Health Care Research Institute, Australian National University.

The International Centre for Allied Health Evidence research team is pleased to present this Stage 1 Report for the Australian Primary Health Care Research Institute (APHCRI) Research stream: *Relationship between sub-acute and primary health care: Older people living in the community: 75+ health checks and functional decline* (FD).

To complete Stage 1 of this project, the team conducted a systematic review of the published and grey literature. The team is pleased to submit this review as our Stage 1 Project Report.

The review of published and grey literature has revealed that there is no standard approach on items for geriatric assessment and that approaches do not reflect all the important domains of primary care. This means that neither individual practitioners nor the health system is equipped to take an evidence-based, comprehensive primary health care approach to early identification, measurement and intervention to address early functional decline as it manifests in different people.

This research project was funded to address the current situation in Australia where functional decline is generally assessed too late, in environments and circumstances that skew results, and using approaches that do not allow for evidence-based, cost efficient scalability. It aims to find out how to best identify FD early and to act to support people to live safely and independently in the community, for as long as they choose. The Australian Medicare Benefits Schedule pays doctors who have been the primary provider over the past 12 months to do health checks for people who are 75+ years old and living in the community (not in hospital or residential care). The checks look at people's physical, thinking and social function and how to keep the person as healthy as possible. This is a clear systemic starting point to inform and improve evidence and practice.

In Stages 2 and 3 of the project, the research team will be working with health practitioners, consumers and the wider community to develop practical tools that enable a consumer-centred approach to early identification and intervention to maximise older people's long term independence, safety and quality of community life. We have formed a partnership with Unicare Health and their five practices in South Australia that is already generating a high level of engagement in this work.

We look forward to providing, in our next report, recommendations on how to best provide a timely, comprehensive, cost efficient, primary health care approach to functional decline for the health and economic benefit of individuals and the community as a whole.

Professor Karen Grimmer
Director, International Centre for Allied Health Evidence
University of South Australia
www.unisa.edu.au/icahe

Table of Contents

List of Figures

List of Tables

Executive Summary

Background

Early detection of functional decline in community-dwelling older adults is essential, given the increasing ageing population in Australia, and the cost of undetected decline to the Australian health system. Early detection of decline in primary care settings will improve the delivery of appropriate services that support older people to age in place safety and independently. Most knowledge on functional decline comes from assessments taken in secondary or tertiary healthcare settings, when older people are in a health crisis, and an unfamiliar environment. There is a lack of knowledge about early functional decline as measured in the community.

Objectives

This report outlines the findings of Stage 1 of the project: two comprehensive systematic reviews of the literature regarding early measures of functional decline, and international primary care screening approaches and items for older people.

Methods

Systematic reviews were undertaken of:

1. the published literature identify a comprehensive pool of relevant articles identifying features, measures and/or manifestations of early functional decline or frailty in a community setting, and
2. the grey literature to identify core elements and features of primary care geriatric assessment in older people internationally

In the first review, data was extracted on the measurement tool and the context in which it was administered. The tools were then grouped into constructs, and then again into broader domains. These were positioned in a hypothesised time-sequence of decline.

In the second review, the elements of the Australian Medicare items 75+ assessment, and international geriatric assessment items were collated. These were then compared with the findings of Part 1.

Key findings

There is no standard approach either in the published literature, or the grey literature, on items for geriatric assessment. Early functional decline can manifest as many things and in many ways. The comprehensive pool of data assessment items identified in the first review suggests that the geriatric assessment approaches described in the second review do not necessarily reflect all the important domains and constructs of primary care, early

functional decline. In Australia, the Medicare '75 plus' health assessment provides a structured way of identifying health issues and conditions that are potentially preventable or amenable to health interventions in order to improve health and/or quality of life. While it reflects all the major domains and subdomains reported in the first review, it does not assess all the important constructs. Thus, locally and internationally, aged care assessments conducted in primary care may miss opportunities to comprehensively measure early functional decline, as it manifests in different people.

INTRODUCTION

This is the first technical report prepared for an Australian Primary Health Care Research Institute Grant (2014) on *Functional decline in community-dwelling older people and the Medicare 75+ Health Assessment.*

Purpose: This report outlines the findings of Stage 1 of the project: two comprehensive systematic reviews of the literature regarding 1) early measures of functional decline, and 2) international primary care screening approaches and assessment items for older people.

Setting the Scene: There are two urgent international challenges regarding ageing in place[1]. These are:

1) valid and comprehensive assessment of function in older people who are currently living independently in the community (to detect the risk of declining in function in the near future)[2], and
2) the best way to analyse this assessment data to identify key features and predictors of early decline, that will assist with effective early intervention strategies[3].

Declining physical and cognitive function (termed functional decline or frailty) is a manifestation of the human body's ageing process[4,5]. In Australia, as an example, there are increasing financial and workforce pressures on the acute care tertiary hospital system, and with demand exceeding capacity in residential care beds, keeping older people at home living safely and independently as long as possible in their community is an imperative[6]. Not only is this cost effective for the individual and the healthcare system, but it builds community capacity and provides older people with access to an extensive network of family, friends, neighbours and relevant community services[2].

To do this, detection of incipient frailty or functional decline needs to occur in the community, when decline is in its early stages[3]. If functional decline is detected early, then resources can be put in place to mitigate or slow the effect of decline, and thus prolong community independence[7,8]. At present, assessment of risk of functional decline mostly occurs in hospital wards or emergency departments, when older people present in health crisis[9,10]. This is not an ideal time because illness and/or the foreign environment may impact on the validity of the assessment. The notion underpinning hospital-based assessment for incipient functional decline (to determine the risk of it occurring) assumes that an over-time event can be predicted in a one-off assessment, in a foreign environment under stressful circumstances.

The literature abounds with measures purported to be of functional decline, largely taken in secondary or tertiary health care settings, including falls and repeated hospitalisations, cognition, capacity to perform basic and instrumental activities of daily living, use of gait aids, nutritional status, ambulation,

quality of life, requiring community supports, and/or having a carer[9,11]. A range of predictors of (later) functional decline are also proposed in the literature, including older age, male gender, living alone, speaking a language other than English at home and having low levels of schooling[4,5,8,9,11-14].

This review provides new knowledge and insights into primary care assessment to detect early functional decline.

Part 1: SYSTEMATIC REVIEW of the PUBLISHED LITERATURE

METHODS of the SEARCH

Aim: This review aimed to identify a comprehensive pool of relevant articles identifying features, measures and/or manifestations of early functional decline or frailty in a community setting

Research design: A systematic literature review

Search strategy: A comprehensive, systematic and iterative process was applied to a comprehensive list of library databases to collate research relating to measures of early functional decline or frailty. The databases searched comprised Medline, Embase, AMED, AgeLine, CINAHL, PsychInfo, Psychology and Behavioural Sciences Collection, Cochrane Library, Wiley Online Library, PubMed, Sociological abstracts. Hand-searching (pearling) of the included studies was conducted to identify any relevant evidence not found in the search, and personal libraries of the lead author and colleagues were also searched for additional relevant literature. The search terms consisted of MeSH terms and keywords and were derived from concepts related to aging, testing or screening, functioning, frailty and community. Appropriate Boolean operators, truncation symbols and wildcards were applied for each database searched. The search was restricted to papers published from 2000 to October 2013. A copy of the full search terms as used in Medline can be found in Appendix 1.

Inclusion criteria: Any peer-reviewed journal article, primary research or expert opinion article, which describes measures of early functional decline or frailty in a primary health care setting, on community dwelling independent elders aged ≥65 years. Literature could include descriptive, precision or validation studies. Relevant systematic reviews and literature reviews were pearled for references that fit the search criteria.

Exclusion criteria: A number of exclusion criteria were applied to ensure that the search focused on early functional decline, community settings and primary care.

1. Subject group/population referred to were considered beyond 'early functional decline':
    - not living independently (ie. own home, independent living units, retirement village, or details pertaining to a subgroup of independence unable to be analysed separately)
    - already identified as fallers, being dependent on care or needing home nursing
    - measures taken in acute, rehabilitation, palliative or surgical settings rather than primary care/community
2. Study not in English
3. Subjects not ≥65 years (or details pertaining to a subgroup of ≥65 years unable to be analysed separately)
4. Purpose or findings of study not relevant to the research question:

- measures relating to functional decline not taken
- disease-specific outcome measures
- mortality the only outcome

5. Study published prior to 2000, literature or systematic review, or not from a peer reviewed journal.

6. Unable to obtain full text.

Data validation: Potentially-relevant articles were imported into EndNote reference manager software[15] and duplicates were removed. An initial validation set of title and abstract selection was conducted on 21 consecutive search results by two researchers (KB, CM). Initial titles and abstracts were then screened for adherence to the inclusion/exclusion criteria independently by the same two researchers, who then came together to discuss any differences in agreement. This process was repeated once full texts of potentially relevant articles were retrieved. Disagreements at this point were arbitrated by a third researcher (KG) who had final discretion in inclusion.

Hierarchy of evidence: The included literature was sorted into the NHMRC Hierarchy of evidence[16]

Critical appraisal: Included literature was not critically appraised as study quality was not congruent with the aims of the review

Data management: Data from the included studies was extracted by two researchers (KB, CM) into a purpose-built MSExcel file[17]. Extracted data included author and date details, country, Information on study aims, design, location and population were extracted in addition to definitions of early functional decline or frailty, and the tools used. Psychometric properties of tools were recorded, based on report of validation in each article.

RESULTS of the SEARCH

An initial search of 11 databases (Medline, Embase, AMED, AgeLine, CINAHL, PsychInfo, Psychology and Behavioural Sciences Collection, Cochrane Library, Wiley Online Library, PubMed and Sociological abstracts), and searching of personal libraries and pearling yielded 2248 results. Of these, 907 were identified as duplicates. Of the remaining 1419 articles, 1079 were excluded based on a title and abstract scan as they did not meet the inclusion criteria (see Figure 1 for more detail). Full text of the remaining 340 articles were obtained, and inclusion criteria once again applied resulting in a further 193 articles being excluded. A total of 146 articles were included in the review[18-163].

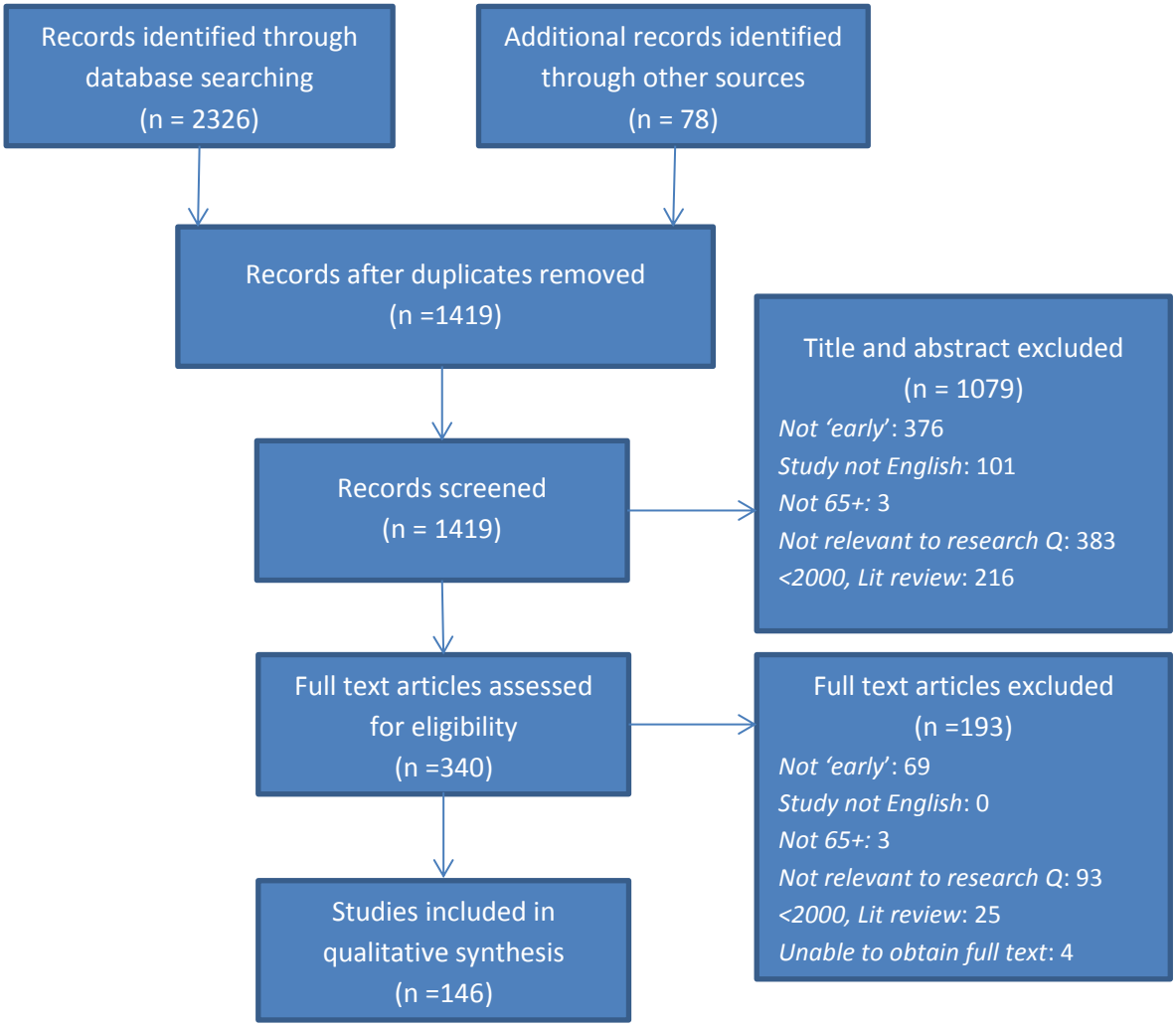

Figure 1. CONSORT diagram of the systematic search results

METHODS of DATA SYNTHESIS

Data extraction: Information from the 147 relevant articles was extracted in the manner reported in the Methods of the Search section. A great many constructs of functional decline were discussed in the included literature, however, only those that were proposed as significant predictors of an increased risk of developing frailty or downstream functional decline, or of measuring frailty or early functional decline were identified for further investigation. An initial count of over 300 measures or tools for detecting early functional decline or frailty in primary healthcare settings (not including those measures which had been translated and validated into other languages and/or cultures), resulted in 195 which were psychometrically tested.

Constructs: In order to make sense of the large number of measurement tools, and to gain clarity on the indicators of early functional decline and/or frailty, relevant measures were organised initially into constructs using an iterative qualitative research approach as advocated by Rice and Ezzy[164]. These constructs reflected the main purpose (or intent) of each measure, rather than the measure itself. Each construct was then written on a sticky note, and a visual map was created, on to which the constructs could be categorised into functional decline domains by two researchers (KB, CM). The constructs were broadly categorised into domains. These domains were validated against the World Health Organization International Classification of Function, Disability and Health (ICF)[165] in consultation with colleagues from occupational therapy, nursing, physiotherapy and epidemiology backgrounds, as well as a consumer representative.

RESULTS of DATA SYNTHESIS

The 107 constructs were clustered into six broad domains; three of which were presented in three sub-domains (see Figure 2 for domain clusters). The number of constructs within each of these is given below, along with a description of how each domain or sub-domain was defined.

Medical status

- Biological systems (10 constructs): objectively measureable biological markers within a person
- Manifestations (17 constructs): manifestations of biological systems

Performance capacity

- Physical (22 constructs): physical markers such as strength, vision and activity levels
- Mental (9 constructs): mental health including anxiety, wellbeing and loneliness
- Cognition (6 constructs): elements of cognitive functioning

Participation

- Environment (4 constructs): external factors affecting a person's participation
- Functional abilities (11 constructs): markers of independent functioning in daily life
- Motivation/volition (5 constructs): internal, behaviour-related factors influencing a person's participation

Demographics

- 8 constructs, including age, gender and living status

Anthropometry

- 10 constructs, measures of body composition

Relationships with healthcare providers

- 5 constructs, frequency and utilisation of services including hospital and general practice

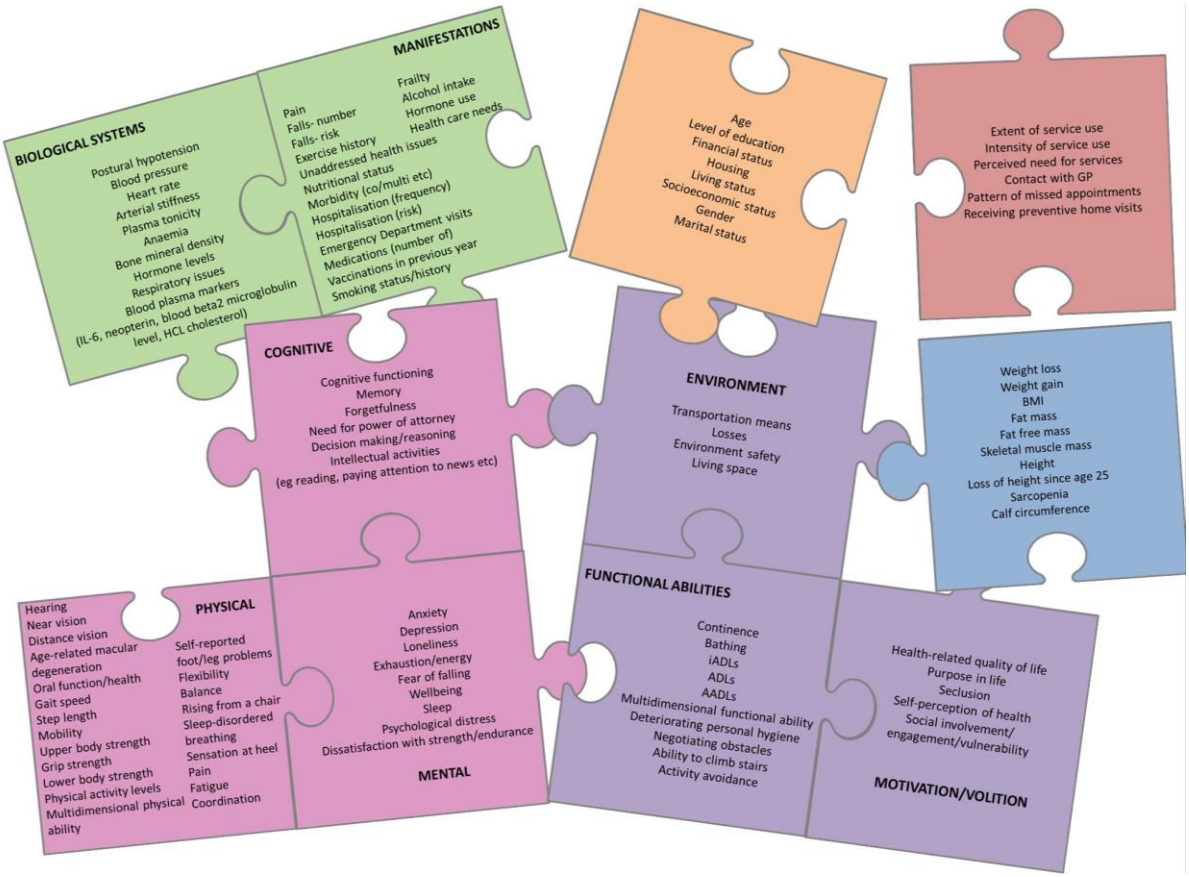

Figure 2. Constructs found in systematic search, clustered into domains and sub domains.

Frailty, in the Medical status Domain, was the most frequently measured construct (59). However, Participation and Performance Capacity were the most frequently measured domains over all (see Appendix 2). In Participation, ADLs (58) and IADLs (39), were the most frequently measured. In Performance capacity, gait speed (25), cognitive functioning (23), mobility (19), depression (16), multidimensional physical abilities (16), balance (13), grip strength (13) and rising from a chair (12) were all found frequently in the literature. Constructs within the Medical status domain; co/multi-morbidities (17) and nutritional status (10), were found in the literature as measures of early functional decline or frailty. In the Demographic domain, age (15) followed by gender (10) and level of education (10), were the most frequently measured constructs.

Time sequence: Domains were organised into a proposed time sequence which reflected the potential for within-person systems measures to progress to external manifestations of decline in terms of person interaction with their environment and/or community, and manifestations of decline reflected as health service usage (See Figure 3).

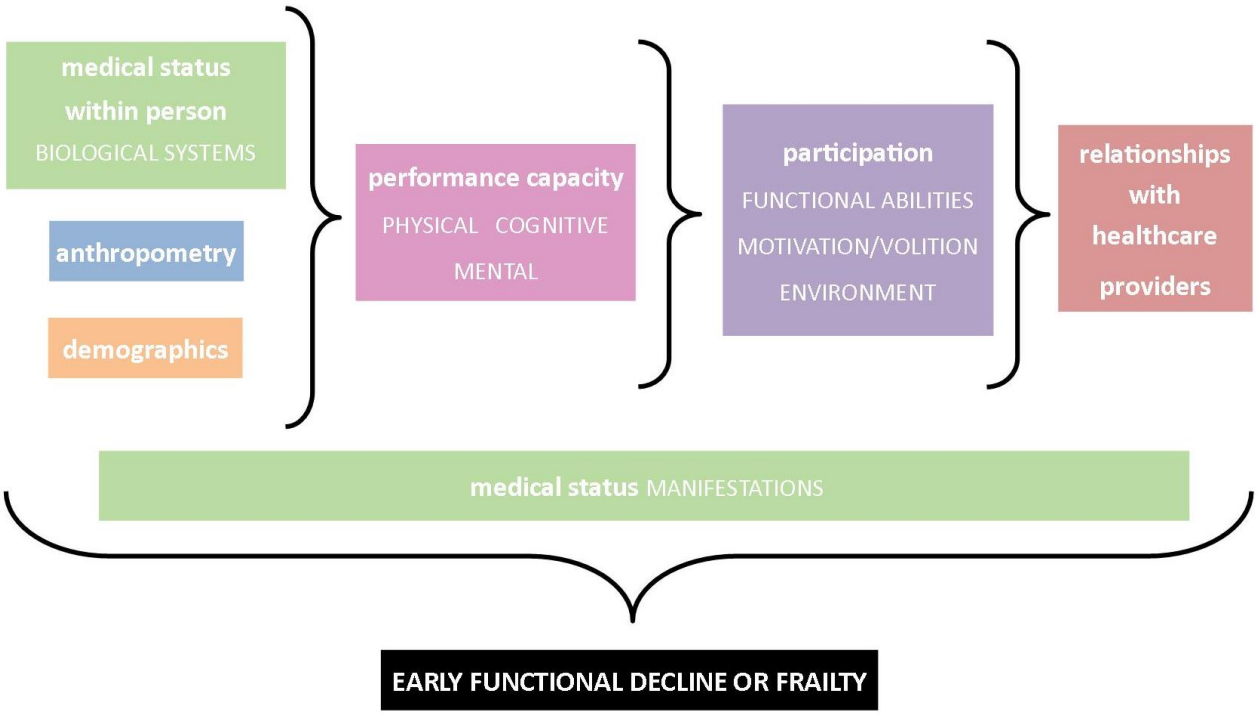

Figure 3. Proposed time sequence organisation of domains of frailty/functional decline.

DISCUSSION

This systematic review of the published literature is the first to our knowledge to systematically gather a comprehensive list of measures which, when applied in primary care settings for community-dwelling, independent people, may be related to early functional decline or incipient frailty. This paper presents a comprehensive overview of how the literatures described the detection of early changes in functional status and /or risk of decline in those not yet established on the downward trajectory of functional decline[166].

Making sense of the literature findings: This systematic review found a large number of articles reporting on 195 tools which measured 107 different constructs of early functional decline or frailty. By organising these constructs into domains, we could distil a large amount of information into a more easily digestible format that would make sense to as many primary care health professionals as possible. For this reason, after identifying the range of domains from the literature, we factored them around the WHO ICF[165]. This model has links with the classification of clinical presentations into pathological processes, impairments, activity restrictions and participation restriction. Figure 4 demonstrates the proposed relationship between the WHO ICF[165] model and the domains identified from this literature review.

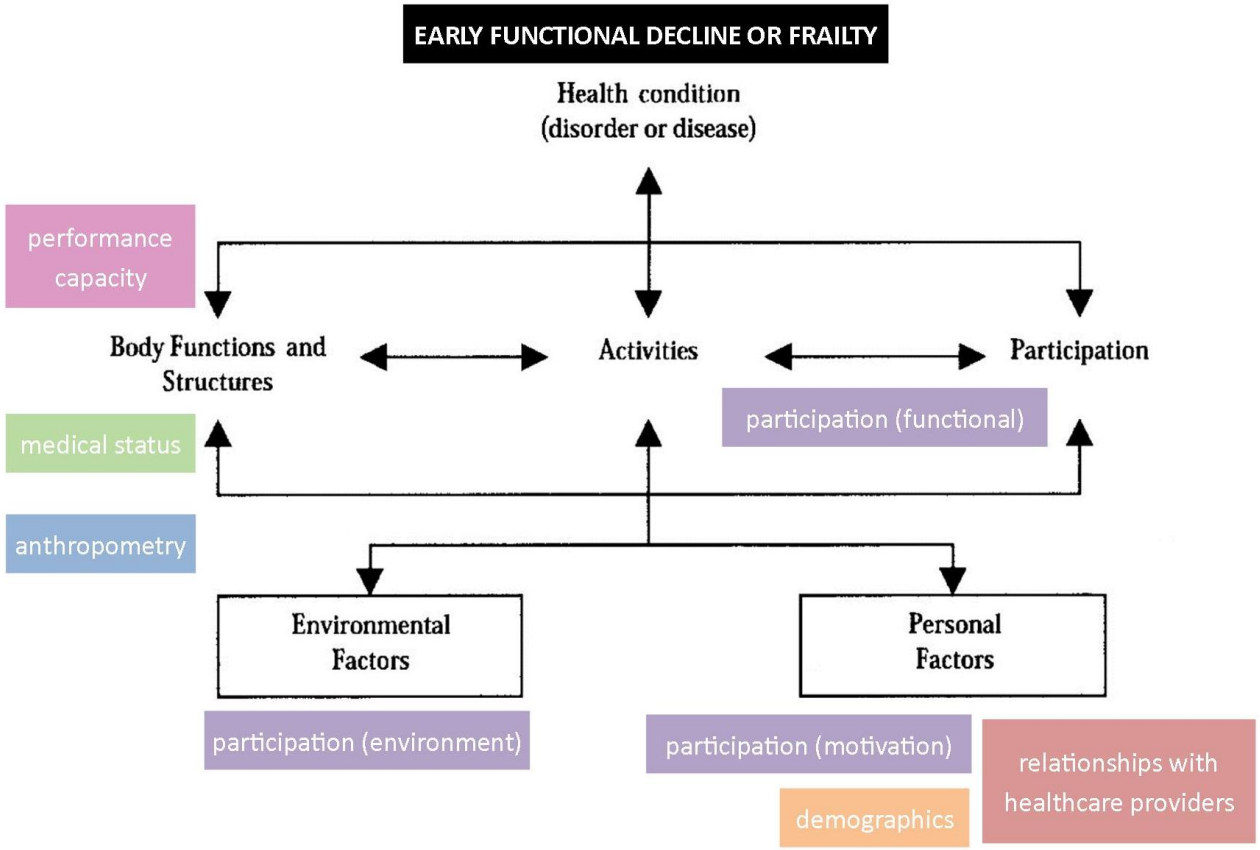

Figure 4. Relationships between International Classification of Functioning, Disability and Health (ICF) model and clustered domains identified by the search

Many tools found in this review were utilised and discussed differently across articles, which further complicates the accurate measurement of early functional decline or frailty. An example is the Short Physical Performance Battery (SPPB). This was variably used to measure function[115,148], physical performance[18,103,129], and frailty[27,101,104,105]. Another example is the Timed Up and Go Test (TUGT), which was variably used to measure walking speed[38,95,101], falls risk[68], gait[85,109], rising from a chair[101], balance[101], and as a global measure of function[99].

This made it challenging to specifically classify the measuring tools into constructs, as many of the articles reported on single aspects of measurement rather than the global purpose of the measurement tools. As such, for the purpose of defining which articles reported on tools which purported to measure specific constructs, the allocation of construct to article (see Appendix 3) was undertaken according to the stated purpose of each measurement tool addressed in the 146 included articles.

***Differentiating between frailty and functional decline**:* This review included key word variations for both functional decline and frailty, in order to capture comprehensive information on early markers of ageing which occurs in the community. It appeared from our review that these terms were often used interchangeably in much of the literature, and significant variability was found around the definition and measurement of frailty itself. Generally frailty or functional decline is considered to be an accumulation of deficits associated with ageing, and often quantified through simple scoring indices that require measurements from a range of categories. According to De Lepeleire et al[62] (p e179) "…there is no linear path from comorbidity through disability to frailty, as frailty may be the cause of disability in some and the consequence in others." The links between frailty and functional decline should be further explored, considering the complex ways in which the measures of early manifestations of ageing were reported from this literature review.

In this review we have attempted to categorise the construct findings into broad domains within a timeline sequence that fits within the WHO ICF[165] model. However, the relationship between the domains is challenging to conceptualise, hence our use of the puzzle image. It is plausible that the domains are all correlated, but the literature does not provide any guidance as to how these domains relate to individual circumstances, or the primary healthcare system within which they may be employed. We have attempted to present the findings in a timeline sequence of possible interaction and consequence, however our synthesis is necessarily limited by the research evidence-base (for instance, how the tools are described within the research papers that report them). Having assembled this synthesis, we recognise that there are many things that this review does not readily tell us. For instance, we still have questions about whether these measurement approaches reflect the views and needs of older people, whether any of these measurement tools are used clinically in primary health settings (and if so, who uses them and for what purpose), how the data from these tools is interpreted in terms of individual primary healthcare decisions, and whether our time-sequence organisation of the domains of measurement is an accurate reflection of the trajectory of early functional decline.

Part 2: GREY LITERATURE REVIEW

METHODS

Aim: This review aimed to describe the core elements and features of primary care geriatric assessment in older people internationally.

Search strategy: The following databases were searched: Google, Google Scholar, Scirus, Grey Literature Report, and Grey Matters. The search terms included a combination of the following:

Concept 1: assessment, evaluation, examination

Concept 2: function, functional decline, frailty

Concept 3: older, geriatric, aged

Inclusion criteria: Grey literature (e.g. technical reports, government reports, theses, commercial documentation) or websites which described functional assessment of older people aged 65 and above, or reported any measure of functional decline or frailty, were considered in the review. The search focused on assessments conducted in countries other than Australia to allow comparison between assessment practices in Australia and other countries.

Exclusion criteria: The search was limited to articles published in the English language.

Data validation: The articles and websites identified by the search strategy were independently assessed by two reviewers (AA, LL). The reviewers examined the articles and websites against the selection criteria and any disagreements regarding inclusion and exclusion were resolved by discussion.

Data extraction: Data extraction was undertaken using a purpose-built data extraction tool. The data extraction tool was piloted by two reviewers on three included articles/websites to ensure that all relevant information is captured and that both reviewers are interpreting the form in the same way. Following this process, the included articles/websites were divided between the two reviewers.

Data domains extracted from included articles/websites comprise the following: author or source, country where the assessment is undertaken, assessment tool, assessment process/procedure, domains of assessment, characteristics of the population to which the assessment is administered, and personnel involved in the assessment.

RESULTS

Regarding the Australian 75+ Health Assessments:

In **Australia**[167], general practitioners administer a government funded annual health assessment on patients aged 75 years or older in order to identify health issues and conditions that are potentially preventable or amenable to interventions. This is known as the '75 plus' health assessment. This assessment helps identify any risk factors demonstrated by an older patient that may require further management. It is also used to identify a broad range of factors that influence an older person's physical, psychological and social functioning. The '75 plus' assessment can take place in the patient's home or in the doctor's consulting room but not available to patients admitted in the hospital or day-hospital facility.

There are four health assessment items under the Medicare Benefits Schedule (i.e. government funded health assessments): 701 (brief), 703 (standard), 705 (long) and 707 (prolonged). A medical practitioner undertaking a health assessment for a person aged 75 years and older may select any one of these items depending on the length of consultation which is determined based on the complexity of the patient's presentation[167].

The specific components of the '75 plus' health assessment include: measurement of blood pressure, pulse rate and rhythm; assessment of patient's medication; assessment of patient's continence; assessment of immunisation status for influenza, tetanus and pneumococcus; assessment of physical function (activities of daily living, fall in the last three months); assessment of psychological function (cognition and mood); and assessment of social function (availability and adequacy of paid and unpaid help, and whether patient is responsible for caring another person). The health practitioner undertaking the health assessment may also consider any need the patient may have for community services, whether the patient is socially isolated, the patient's oral health and dentition, and the patient's nutrition status[167].

The '75 plus' assessment is an in-depth assessment that includes information collection (history taking, undertaking or organising examinations and investigations as required), making an overall assessment, recommending appropriate interventions, providing advice and information to patients, keeping a record of the health assessment and offering patient a written report, and offering the patient's carer a copy of the report or extracts of the report relevant to the carer.

Table 1 outlines the items in the '75 plus' health assessment mapped against the constructs and domains identified in the first part of this literature search. As shown in Table 1, the '75 plus' assessment, while it reflects all the major domains and subdomains reported in the literature, it does not assess all the constructs reported for each subdomain.

Regarding other countries' approaches to primary care geriatric assessment: The reviewers found information about primary care geriatric assessment practices in United Kingdom, Canada, Austria, United States of America and Asian countries such as Philippines, Singapore, Hong Kong, India and Israel. Across countries, there is consistency in terms of the different domains included in the assessment process and the personnel (i.e. assessment team) who administer the assessment. The assessment team typically involves a physician who specialises in the care of older people (i.e.

geriatrician), nurses, physiotherapists, occupational therapists, social workers and other relevant allied health practitioners. Regardless of country, the geriatric assessment is commonly administered to older people who experience health issues and are likely to deteriorate in function.

Table 1 shows the different constructs and domains examined by each of the countries and mapped against those identified in Part 1. Across countries, medical status, performance capacity and participation are consistently assessed, whereas assessment of demographics, anthropometry and service use are uncommon.

In the **United Kingdom**[168-172], the Comprehensive Geriatric Assessment (CGA) is a service provided to older people to examine their medical condition, mental health, psychological and functional capacity, and social circumstances. It is a multidimensional and usually interdisciplinary diagnostic process that assists in developing and implementing a coordinated and holistic plan for treatment, rehabilitation, support and long term follow up. The comprehensive assessment, which utilises standardised tools, is administered under the following circumstances: an older person admitted acutely to a hospital and is likely to develop specialist medical care needs, an older person who has history of multiple falls, a frail patient prior to a surgical procedure, an older person receiving intermediate care or other community-based rehabilitation, planning for transfer of care in rehabilitation/re-enablement, or for continuing care assessment (using the national Decision Support tool in England). The components of CGA include domains such as – medical status (co-morbid conditions and disease severity, medications review, nutritional status and problem list), mental health (cognition, mood and anxiety, fears), functional capacity (basic activities of daily living, gait and balance, activity/exercise status, instrumental activities of daily living), social circumstances (informal support from friends or family, social network, eligibility for being offered care resources), and environment (home comfort, facilities and safety, use or potential use of tele-health technology, transport facilities, accessibility to local resources). Ideally the assessment team should consist of a specialist physician in the care of older people, a specialist nurse with experience in geriatric assessment, a social worker or specialist nurse with direct access to care services, and relevant therapists.

In **Canada**[173-177], a comprehensive geriatric assessment is undertaken in people who are 75 years and older and are having problems with mobility, falls, confusion, depression, incontinence, managing their medications and their day-to-day living activities. The program is also intended for older people who have unstable medical conditions. Geriatric assessment may also be required in older people who show signs such as missing meals and malnutrition, unsafe living conditions, memory problems, wandering, poor judgement, unpaid bills, and changes in sleeping patterns and/or appetite suggestive of depression. A geriatric assessment team typically includes a geriatrician, nutritionist, registered nurse, physiotherapist, occupational therapist, rehabilitation assistant, and a social worker. Assessments are usually done with standardised tools to measure the following domains – psychological assessment, functional assessment which includes self-care capacity and ability for other activities of daily living, cognitive assessment, falls, balance and gait assessment, medication management, urinary incontinence, and assessment of adverse events.

In **Austria**[178], geriatric assessment is administered to older people who are admitted in geriatric acute care units. The admission criteria for a geriatric acute care service include somatic and/or psychiatric morbidity requiring institutional (inpatient) care, restricted or threatened independence through loss

of physical and/or cognitive functional capacities or through psychosocial problems triggered by illness, and need for rehabilitative measures aimed at improvement or maintenance of functions and at reintegration to the patient's original social environment. Assessments are done following admission and at discharge using standardised tools, and include examination of ability to perform activities of daily living, cognition, intensity of care required, mobility and balance, nutrition, social situation, depression, incontinence, vitality and drug handling. The assessment involves a team of physicians, nurse, psychologist, occupational therapist, physiotherapist and social worker.

In **America**[179-183], standardised tools are used to conduct a comprehensive geriatric assessment. A complete assessment is usually initiated when a physician detects a potential problem such as confusion, memory loss, frequent falls, decreased mobility, depression, impaired vision or hearing, nutritional concerns, advancing arthritis, incontinence or other physical and cognitive impairments. Similar to assessments undertaken in other countries, the geriatric assessment in America is multidimensional and involves multidisciplinary input to evaluate an older person's functional ability, physical health, cognition, mental health, and socio-environmental circumstances. It also includes a review of medication intake as well as a review of immunisation status. The assessment findings are used to determine diagnosis of medical conditions, and allow formulation of treatment and follow up plans, coordination of care and evaluation of long-term care needs. The assessment team typically involves a physician, nutritionist, social worker, physiotherapist and occupational therapist.

In the **Philippines**[184-185], comprehensive geriatric assessments are undertaken using standardised tools in either inpatient or outpatient settings. Assessments are done by a medical doctor specialised in geriatric medicine and include evaluation of basic and advance activities of daily living, nutrition, mental status and gait and balance assessment. It is usually indicated for elderly aged 60 years old and above, or if an older person displays any of the following symptoms such as frailty, polypharmacy, incontinence, problem on mobility, cognition, behaviour and sensory problems (visual and hearing). The evaluation results are then used to determine the most appropriate management and treatment for geriatric disorders. In addition to inpatient and outpatient consultative services, home care program is also in place whereby geriatric specialists conduct home visits to bedbound patients or to patients who cannot go to hospitals for follow up checks.

In **Singapore**[186], assessments are administered to frail elderly persons aged 65 and above who have complex health problems including a decline in day to day function, self-care abilities, mobility, weight loss and decrease in appetite. These assessments are usually undertaken by a geriatric assessment specialist (medical doctor) or a geriatric nurse clinician using standardised tools that measure fall, balance, continence, chronic pain, cognition and memory, and the need for geriatric rehabilitation. Assessments may also include blood analysis or special investigations like x-ray. The patients are initially assessed by a nurse clinician then a geriatrician who may request for additional tests or ancillary procedures. Patients may then be referred to other healthcare professionals such as physiotherapist, occupational therapist or medical social worker depending on the result of the assessment. Patients are also required to bring their medications during the initial consultation. An individual care plan is formulated following assessment, with inputs from the family members and caregivers. Relevant practitioners inform the patient and their families about the clinical findings, diagnosis and recommended management and may provide education to caregivers and family

members on different strategies of care such as patient safety, nutrition and coping with difficult behaviour.

In **Hong Kong**[187-189], a geriatrician-led and nurse implemented screening using standardised assessment toll is usually done for senior citizens aged 65 and above at a geriatric day hospital. This is a multidisciplinary assessment which involves allied health professionals such as dieticians, podiatrists, psychologists, psychiatrists and social workers. If patient is unable to visit the hospital, the community geriatric team may visit the elderly patient's home allowing a geriatric assessment to be held in the home environment. The Elderly Health Centres of the Department of Health provide health assessment, physical check-up, counselling, curative treatment and health education services to the elderly. Senior citizens aged 65 and above can enrol as members of these centres. In addition, Geriatric Day Hospitals under the Hospital Authority provide multidisciplinary assessment, continued care and rehabilitation to geriatric patients. Assessment includes evaluation of cognitive and psychiatric symptoms, functional capacity which includes basic and instrumental activities of daily living, social, environmental and economic resources.

In **India**[190,191], comprehensive geriatric assessments using standardised assessment tools are offered to senior citizens aged 60 and above. These assessments are usually administered by medical doctors and geriatric nurses, and include examination of physical, social, familial, economic, nutritional, and psychological and rehabilitation aspects of geriatric healthcare.

In **Israel**[192,193], assessments are undertaken using standardised tools, structured screening questionnaires and a battery of standard tests and questionnaires for geriatric evaluation. It is indicated for individuals who are 65 years and older. Functional status or the ability to manage daily routines to meet basic needs, gait, mobility, bowel and bladder habits, vision, hearing, memory, medications and social needs are part of the assessment. The first phase in the process is patient identification followed by screening. In screening, a structured questionnaire is used to gather information on demographics, medical, nursing, functional and social situations of the patient. Based on the screening result, a full or partial geriatric assessment may be undertaken. The last phase involves summary and recommendation on further medical, nursing, functional and social care. The personnel involve in the process includes the geriatric physician, nurse practitioners, physiotherapist, occupational therapist and dieticians.

Appendix 4 outlines the correlations between the Australian 75+ Health Assessment items[167], and the Geriatric Assessment Scale[194] commonly used internationally.

Table 1. Items in the '75 plus' health assessment mapped against the constructs and domains identified

Country	Medical status		Performance capacity			Participation			Demogr-aphics	Anthro-pometry	Relationships with healthcare providers
	Biological systems	Manifestation	Physical	Mental	Cognition	Environment	Functional abilities	Motivation / volition			
Australia (75 plus health assessment)	Blood pressure Pulse rate and rhythm Skin and Feet Reproductive and sexual health	Immunisation status Diet and Nutrition Medications	Vision Hearing Mobility/ Activity Risk for falls	Mental Status Psychological Assessment	Cognition Memory Thinking Planning Mood	Home Safety	Continence Fitness for Driving Personal mobility/ADL	Social history Social support Legal issues Personal wellbeing	Patient demographics	Height Weight Blood Pressure BMI	Medical support (allied/ pharmacist/ alternative/ others) Community Services
UK		Co-morbid & disease severity Medications Nutritional status	Balance Activity/exercise status Gait	Anxiety	Cognition Mood Fear	Eligibility for being offered care resources Home resources Transport facilities Technology Local resources	Basic & Instrumental ADLs	Informal support Social network			
Canada		Falls Medication management Adverse events	Balance and gait		Cognition		ADLs/self-care Urinary incontinence				
Austria		Nutrition Drug handling	Mobility Balance Vitality	Depression	Cognition		ADL Incontinence	Social situation			

Philippines		Nutrition	Gait and balance	Mental status			ADLs				
Singapore		Falls	Balance Pain		Cognition and memory disorder		Continence				
India		Nutrition	Physical	Psychological		Social resources, familial and economic resources					
Hong Kong			Physical health	Mental function	Cognitive and psychiatric symptoms	Social resources Environmental resources Economic resources	Basic and instrumental ADLs				
USA		Falls risk Nutrition	Gait Mobility Oral health Pain Sensory perception	Depression	Dementia and delirium		ADLs Urinary Incontinence			Weight loss	
Israel		Medications	Gait and mobility Vision Hearing		Memory		Functional status – daily routine and basic needs Bowel and bladder habits	Social needs			

REFERENCES

1. Commonwealth of Australia., Living Longer. Living Better. Aged Care Reform in Action – Staying at home. 2013: Department of Health and Ageing.
2. Productivity Commission, An Ageing Australia: Preparing for the Future. 2013: Canberra.
3. Bartali, B., et al., Low nutrient intake is an essential component of frailty in older persons. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 2006. 61(6): p. 589-593.
4. Rockwood, K., D.B. Hogan, and C. MacKnight, Conceptualisation and measurement of frailty in elderly people. Drugs & Aging, 2000. 17(4): p. 295-302.
5. Espinoza, S. and J.D. Walston, Frailty in older adults: insights and interventions. Cleveland Clinic Journal of Medicine, 2005. 72(12): p. 1105-1112.
6. Commonwealth of Australia, Australia's Demographic Challenges. 2004: Treasury Canberra.
7. Rockwood, K., et al., Frailty in elderly people: an evolving concept. CMAJ: Canadian Medical Association Journal, 1994. 150(4): p. 489.
8. Kahn, R.L., Guest Editorial: On" Successful Aging and Well-Being: Self-Rated Compared With Rowe and Kahn". The Gerontologist, 2002. 42(6): p. 725-726.
9. Beaton, K. and K. Grimmer, Tools that assess functional decline: systematic literature review update. Clinical interventions in aging, 2013. 8: p. 485.
10. Hoogerduijn, J.G., et al., The prediction of functional decline in older hospitalised patients. Age and ageing, 2012. 41(3): p. 381-387.
11. Sutton, M., K. Grimmer-Somers, and L. Jeffries, Screening tools to identify hospitalised elderly patients at risk of functional decline: a systematic review. International journal of clinical practice, 2008. 62(12): p. 1900-1909.
12. Crews, D.E. and S. Zavotka, Aging, disability, and frailty: implications for universal design. Journal of physiological anthropology, 2006. 25(1): p. 113-118.
13. Cohen, H.J., Editorial In Search of the Underlying Mechanisms of Frailty. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 2000. 55(12): p. M706-M708.
14. Fried, L.P., et al., Untangling the concepts of disability, frailty, and comorbidity: implications for improved targeting and care. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 2004. 59(3): p. M255-M263.
15. Thomson Reuters, 2013, New York, NY, USA. EndNote referencing software version X7
16. Merlin, T., A. Weston, and R. Tooher, Extending an evidence hierarchy to include topics other than treatment: revising the Australian 'levels of evidence'. BMC Medical Research Methodology, 2009. 9(1): p.34.
17. Microsoft, Microsoft Excel. 2010: Redmond, Washington. Computer Software.
18. Aguilar-Navarro, S., et al., The severity of urinary incontinence decreases health-related quality of life among community-dwelling elderly. Journals of Gerontology Series A-Biological Sciences & Medical Sciences, 2012. 67(11): p. 1266-71.
19. Alexander, N., et al., Self-reported walking ability predicts functional mobility performance in frail older adults. Journal - American Geriatrics Society, 2000. 48(11): p. 1408-13.
20. Ament, B.H.L., et al., Resources as a protective factor for negative outcomes of frailty in elderly people. Gerontology, 2012. 58(5): p. 391-397.
21. Andrew, M.K., et al., The impact of social vulnerability on the survival of the fittest older adults. Age & Ageing, 2012. 41(2): p. 161-5.

22. Apovian, C.M., et al., Body mass index and physical function in older women. Obesity Research, 2002. 10(8): p. 740-7.
23. Armi, F., E. Guilley, and C.J.L. d'Epinay, Health: Support provided and received in advanced old age. A five-year follow-up. Zeitschrift für Gerontologie und Geriatrie, 2008. 41(1): p. 56-62.
24. Au, A., et al., Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal. Canadian Journal on Aging, 2011. 30(4): p. 647-655.
25. Ávila-Funes, J.A., et al., Cognitive Impairment Improves the Predictive Validity of the Phenotype of Frailty for Adverse Health Outcomes: The Three-City Study. Journal of the American Geriatrics Society, 2009. 57(3): p. 453-461.
26. Ballard, J., M. Mooney, and O. Dempsey, Prevalence of frailty-related risk factors in older adults seen by community nurses. Journal of Advanced Nursing, 2013. 69(3): p. 675-84.
27. Bandinelli, S., et al., A randomized, controlled trial of disability prevention in frail older patients screened in primary care: the FRASI study. Design and baseline evaluation. Aging-Clinical & Experimental Research, 2006. 18(5): p. 359-66.
28. Barr, E.L., et al., Foot and leg problems are important determinants of functional status in community dwelling older people. Disabil Rehabil, 2005. 27(16): p. 917-23.
29. Bauer, E.J., Transitions from home to nursing home in a capitated long-term care program: the role of individual support systems. Health Serv Res, 1996. 31(3): p. 309-26.
30. Bennett, A.K., Older age underwriting: frisky vs frail. Journal of Insurance Medicine (Seattle), 2004. 36(1): p. 74-83.
31. Bilotta, C., et al., Dimensions and correlates of quality of life according to frailty status: a cross-sectional study on community-dwelling older adults referred to an outpatient geriatric service in Italy. Health & Quality of Life Outcomes, 2010. 8: p. 56.
32. Bilotta, C., et al., Social vulnerability, mental health and correlates of frailty in older outpatients living alone in the community in Italy. Aging & Mental Health, 2010. 14(8): p. 1024-36.
33. Bilotta, C., et al., Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study. Archives of Gerontology & Geriatrics, 2012. 54(2): p. e23-8.
34. Binder, E.F., et al., Effects of extended outpatient rehabilitation after hip fracture: A randomized controlled trial. Journal of the American Medical Association, 2004. 292(7): p. 837-846.
35. Bleijenberg, N., et al. Proactive and integrated primary care for frail older people: design and methodological challenges of the Utrecht primary care PROactive frailty intervention trial (U-PROFIT). BMC geriatrics, 2012. 12, 16 DOI: 10.1186/1471-2318-12-16.
36. Bleijenberg, N., et al., Development of a Proactive Care Program (U-CARE) to Preserve Physical Functioning of Frail Older People in Primary Care. Journal of Nursing Scholarship, 2013. 45(3): p. 230-237.
37. Bollwein, J., et al., Dietary quality is related to frailty in community-dwelling older adults. Journals of Gerontology Series A-Biological Sciences & Medical Sciences, 2013. 68(4): p. 483-9.

38. Bonnefoy, M., et al., Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study. Journal of Nutrition, Health & Aging, 2012. 16(4): p. 370-7.
39. Boyle, P.A., A.S. Buchman, and D.A. Bennett, Purpose in life is associated with a reduced risk of incident disability among community-dwelling older persons. American Journal of Geriatric Psychiatry, 2010. 18(12): p. 1093-1102.
40. Boyle, P.A., et al., Physical Frailty Is Associated with Incident Mild Cognitive Impairment in Community-Based Older Persons. Journal of the American Geriatrics Society, 2010. 58(2): p. 248-255.
41. Brown, M., Too many weak days--diagnosis: physical frailty. Missouri Medicine, 2009. 106(2): p. 121-5; quiz 125-6.
42. Brown, M., et al., Physical and performance measures for the identification of mild to moderate frailty. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 2000. 55(6): p. M350-M355.
43. Burton, L.C., et al., Health outcomes and Medicaid costs for frail older individuals: a case study of a MCO versus fee-for-service care. Journal of the American Geriatrics Society, 2002. 50(2): p. 382-388.
44. Carr, D.B., et al., Characteristics of frail older adult drivers. Journal of the American Geriatrics Society, 2006. 54(7): p. 1125-9.
45. Carrière, I., et al., Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women. Journal of clinical epidemiology, 2005. 58(11): p. 1180-1187.
46. Castrejon-Perez, R.C., et al., Oral health conditions and frailty in Mexican community-dwelling elderly: a cross sectional analysis. BMC Public Health, 2012. 12: p. 773.
47. Cawthon, P.M., et al., Frailty in older men: prevalence, progression, and relationship with mortality. Journal of the American Geriatrics Society, 2007. 55(8): p. 1216-1223.
48. Chang, Y.C., et al., eFurniture for home-based frailty detection using artificial neural networks and wireless sensors. Med Eng Phys, 2013. 35(2): p. 263-8.
49. Chang, Y.-W., et al., Frailty and its impact on health-related quality of life: a cross-sectional study on elder community-dwelling preventive health service users. PLoS ONE [Electronic Resource], 2012. 7(5): p. e38079.
50. Chen, C.-Y., et al., The prevalence of subjective frailty and factors associated with frailty in Taiwan. Archives of gerontology and geriatrics, 2010. 50: p. S43-S47.
51. Chen, D.W., et al., A pilot study for reliability and validity of mini-physical performance test for chinese male elders. International Journal of Gerontology, 2012. 6(1): p. 16-19.
52. Cigolle, C.T., et al., Comparing Models of Frailty: The Health and Retirement Study. Journal of the American Geriatrics Society, 2009. 57(5): p. 830-839.
53. Clausen, T., et al., Diminished mental- and physical function and lack of social support are associated with shorter survival in community dwelling older persons of Botswana. BMC Public Health, 2007. 7: p. 144.
54. Corapi, K.M., H.M. McGee, and M. Barker, Screening for frailty among seniors in clinical practice. Nature Clinical Practice Rheumatology, 2006. 2(9): p. 476-80.
55. Covinsky, K.E., et al., Development and validation of an index to predict activity of daily living dependence in community-dwelling elders. Medical Care, 2006. 44(2): p. 149-57.

56. Cruz-Jentoft, A.J., et al., Understanding sarcopenia as a geriatric syndrome. Current Opinion in Clinical Nutrition and Metabolic Care, 2010. 13(1): p. 1-7.
57. Dahlin-Ivanoff, S., et al. Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home. BMC geriatrics, 2010. 10, 27 DOI: 10.1186/1471-2318-10-27.
58. Daniels, R., et al., A disability prevention programme for community-dwelling frail older persons. Clinical Rehabilitation, 2011. 25(11): p. 963-74.
59. Dapp, U., et al., The longitudinal urban cohort ageing study (LUCAS): study protocol and participation in the first decade. BMC geriatrics, 2012. 12(1): p. 35.
60. Davey, A., et al., Life on the edge: patterns of formal and informal help to older adults in the United States and Sweden. Journals of Gerontology Series B-Psychological Sciences & Social Sciences, 2005. 60(5): p. S281-8.
61. de Gonzalo-Calvo, D., et al., Long-term training induces a healthy inflammatory and endocrine emergent biomarker profile in elderly men. Age, 2012. 34(3): p. 761-71.
62. De Lepeleire, J., et al., Frailty: An emerging concept for general practice. British Journal of General Practice, 2009. 59(562): p. 364-369.
63. Delbaere, K., et al., Fear-related avoidance of activities, falls and physical frailty. A prospective community-based cohort study. Age Ageing, 2004. 33(4): p. 368-73.
64. den Ouden, M.E.M., et al., Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study. Experimental Gerontology, 2013. 48(4): p. 437-443.
65. Dias, R.C., et al., Characteristics associated with activity restriction induced by fear of falling in community-dwelling elderly. Revista Brasileira de Fisioterapia, 2011. 15(5): p. 406-13.
66. Doba, N., et al., A pilot trial to predict frailty syndrome: The Japanese Health Research Volunteer Study. Experimental Gerontology, 2012. 47(8): p. 638-643.
67. Drubbel, I., et al., Identifying frailty: do the Frailty Index and Groningen Frailty Indicator cover different clinical perspectives? a cross-sectional study. BMC family practice, 2013. 14(1): p. 64.
68. Ehrlich, P.L., Caring for the frail elderly in the home: a multidisciplinary approach. Home Health Care Management & Practice, 2006. 19(1): p. 38-44.
69. Ensrud, K.E., et al., Sleep disturbances and frailty status in older community-dwelling men. Journal of the American Geriatrics Society, 2009. 57(11): p. 2085-93.
70. Ensrud, K.E., et al., A comparison of frailty indexes for the prediction of falls, disability, fractures, and mortality in older men. Journal of the American Geriatrics Society, 2009. 57(3): p. 492-498.
71. Ensrud, K.E., et al., Frailty and risk of falls, fracture, and mortality in older women: The study of osteoporotic fractures. Journals of Gerontology - Series A Biological Sciences and Medical Sciences, 2007. 62(7): p. 744-751.
72. Femia, E.E., S.H. Zarit, and B. Johansson, The disablement process in very late life: a study of the oldest-old in Sweden. Journals of Gerontology Series B-Psychological Sciences & Social Sciences, 2001. 56(1): p. P12-23.
73. Fletcher, P.C., et al., Risk factors for restriction in activity associated with fear of falling among seniors within the community. Journal of patient safety, 2010. 6(3): p. 187-91.

74. Formiga, F., et al., Falls in nonagenarians living in their own homes: the Nonasantfeliu study. Journal of Nutrition, Health & Aging, 2008. 12(4): p. 273-6.
75. Fried, L.P., et al., Frailty in older adults evidence for a phenotype. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 2001. 56(3): p. M146-M157.
76. Woods, N.F., LaCroix, A.Z., Gray, S.L., Aragaki, A., Cochrane, B.B., Brunner, R.L., Masaki, K., Murray, A., & Newman, A.B. (2005). 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):1321–1330.
77. Fukutomi, E., et al., Importance of cognitive assessment as part of the "Kihon Checklist" developed by the Japanese Ministry of Health, Labor and Welfare for prediction of frailty at a 2-year follow up. Geriatrics & Gerontology International, 2013. 13(3): p. 654-662.
78. Gale, C.R., et al., Close Relationships and Risk of Frailty: The Hertfordshire Cohort Study. Journal of the American Geriatrics Society, 2012. 60(2): p. 390-392.
79. Garcia-Garcia, F.J., et al., The prevalence of frailty syndrome in an older population from Spain. The Toledo Study for Healthy Aging. Journal of Nutrition, Health & Aging, 2011. 15(10): p. 852-6.
80. Gill, T., et al., A program to prevent functional decline in physically frail, elderly persons who live at home. New England Journal of Medicine, 2002. 347(14): p. 1068-74.
81. Gill, T.M., et al., The development of insidious disability in activities of daily living among community-living older persons. American Journal of Medicine, 2004. 117(7): p. 484-491.
82. Gill, T.M., et al., The dynamic nature of mobility disability in older persons. Journal of the American Geriatrics Society, 2006. 54(2): p. 248-54.
83. Gill, T.M., et al., A prehabilitation program for the prevention of functional decline: Effect on higher-level physical function. Archives of Physical Medicine and Rehabilitation, 2004. 85(7): p. 1043-1049.
84. Gill, T.M., et al., Transitions between frailty states among community-living older persons. Archives of Internal Medicine. 2006, 166(4): p. 418-423.
85. Giné-Garriga, M., et al., The effect of functional circuit training on physical frailty in frail older adults: a randomized controlled trial. Journal of aging and physical activity, 2010. 18(4): p. 401.
86. Gitlin, L.N., et al., Variation in response to a home intervention to support daily function by age, race, sex, and education. Journals of Gerontology Series A-Biological Sciences & Medical Sciences, 2008. 63(7): p. 745-50.
87. Gobbens, R.J. and M.A. van Assen, Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire. Arch Gerontol Geriatr, 2012. 55(2): p. 369-79.
88. Gobbens, R.J.J., et al., The Predictive Validity of the Tilburg Frailty Indicator: Disability, Health Care Utilization, and Quality of Life in a Population at Risk. Gerontologist, 2012. 52(5): p. 619-631.
89. Gu, D., et al., Frailty and mortality among Chinese at advanced ages. Journals of Gerontology Series B-Psychological Sciences & Social Sciences, 2009. 64(2): p. 279-89.
90. Gurina, N.A., E.V. Frolova, and J.M. Degryse, A roadmap of aging in Russia: The prevalence of frailty in community-dwelling older adults in the St. Petersburg district—The "crystal" Study. Journal of the American Geriatrics Society, 2011. 59(6): p. 980-988.

91. Hébert, R., et al., Impact of PRISMA, a coordination-type integrated service delivery system for frail older people in Quebec (Canada): A quasi-experimental study. Journals of Gerontology Series B-Psychological Sciences & Social Sciences, 2010. 65B(1): p. 107-18.
92. Hébert, R., et al., Efficacy of a nurse-led multidimensional preventive programme for older people at risk of functional decline. A randomized controlled trial. Age and Ageing, 2001. 30(2): p. 147-153.
93. Heppenstall, C.P., et al., Frailty: dominos or deliberation? New Zealand Medical Journal, 2009. 122(1299): p. 42-53.
94. Heuberger, R.A., The frailty syndrome: a comprehensive review. Journal of Nutrition in Gerontology and Geriatrics, 2011. 30(4): p. 315-368.
95. Ho, L.S., H.G. Williams, and E.A.W. Hardwick, Discriminating characteristics of community-dwelling elderly at high and low risk for frailty. Journal of Aging and Physical Activity, 2002. 10(4): p. 413-431.
96. Holroyd-Leduc, J.M., K.M. Mehta, and K.E. Covinsky, Urinary Incontinence and Its Association with Death, Nursing Home Admission, and Functional Decline. Journal of the American Geriatrics Society, 2004. 52(5): p. 712-718.
97. Hoogendijk, E.O., et al., Self-perceived met and unmet care needs of frail older adults in primary care. Arch Gerontol Geriatr, 2013.
98. Hyde, Z., et al., Low free testosterone predicts frailty in older men: the health in men study. Journal of Clinical Endocrinology & Metabolism, 2010. 95(7): p. 3165-3172.
99. Jacobson, B., et al., Independent static balance training contributes to increased stability and functional capacity in community-dwelling elderly people: A randomized controlled trial. Clinical Rehabilitation, 2011. 25(6): p. 549-56.
100. Jurschik, P., et al., Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey. Archives of Gerontology & Geriatrics, 2012. 55(3): p. 625-31.
101. Karnik, K. and D.J. Mazzatti, Review of tools and technologies to assess multi-system functional impairment and frailty. Clinical Medicine: Geriatrics, 2009. 2009(3): p. 1-8.
102. Kiely, D.K., L.A. Cupples, and L.A. Lipsitz, Validation and comparison of two frailty indexes: The MOBILIZE Boston Study. Journal of the American Geriatrics Society, 2009. 57(9): p. 1532-9.
103. Kim, C.-O. and K.-R. Lee, Preventive effect of protein-energy supplementation on the functional decline of frail older adults with low socioeconomic status: a community-based randomized controlled study. Journals of Gerontology Series A-Biological Sciences & Medical Sciences, 2013. 68(3): p. 309-16.
104. Lacas, A. and K. Rockwood, Frailty in primary care: A review of its conceptualization and implications for practice. BMC Medicine, 2012. 10(4).
105. Landi, F., et al., HDL-cholesterol and physical performance: Results from the ageing and longevity study in the sirente geographic area (ilSIRENTE Study). Age and Ageing, 2007. 36(5): p. 514-520.
106. Landi, F., et al., Daily Pain and Functional Decline Among Old-Old Adults Living in the Community: Results from the ilSIRENTE Study. Journal of Pain and Symptom Management, 2009. 38(3): p. 350-357.

107. Lang, P.O., J.P. Michel, and D. Zekry, Frailty syndrome: a transitional state in a dynamic process. Gerontology, 2009. 55(5): p. 539-49.
108. Leng, S.X., et al., IL-6-independent association of elevated serum neopterin levels with prevalent frailty in community-dwelling older adults. Age & Ageing, 2011. 40(4): p. 475-81.
109. Li, C.-M., et al., The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial. Archives of gerontology and geriatrics, 2010. 50: p. S39-S42.
110. Li, I.C., Y.-C. Chen, and H.-T. Kuo, The health status and health promotion behavior of low-income elderly in the Taipei area. Journal of Nursing Research, 2005. 13(4): p. 305-12.
111. Lin, C.-C., et al., Frailty and its associated factors in an elderly Taiwanese metropolitan population. Journal of the American Geriatrics Society, 2013. 61(2): p. 292-4.
112. Luukinen, H., et al., Prevention of disability by exercise among the elderly: a population-based, randomized, controlled trial. Scandinavian journal of primary health care, 2006. 24(4): p. 199-205.
113. Macklai, N.S., et al., Prospective association of the SHARE-operationalized frailty phenotype with adverse health outcomes: evidence from 60+ community-dwelling Europeans living in 11 countries. BMC geriatrics, 2013. 13(1): p. 3.
114. Malaguarnera, M., et al., What is the frailty in elderly? Value and significance of the multidimensional assessments. Archives of Gerontology & Geriatrics, 2013. 56(1): p. 23-6.
115. Matheï, C.B.P.J., Associations Between Cytomegalovirus Infection and Functional Impairment and Frailty in the BELFRAIL Cohort. Journal of the American Geriatrics Society, 2011. 59(12): p. 2201-2208.
116. McGee, H.M., et al., Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use. Journal of the American Geriatrics Society, 2008. 56(1): p. 8-15.
117. Mehta, K.M., K. Yaffe, and K.E. Covinsky, Cognitive impairment, depressive symptoms, and functional decline in older people. Journal of the American Geriatrics Society, 2002. 50(6): p. 1045-1050.
118. Melis, R.J., et al., A randomized study of a multidisciplinary program to intervene on geriatric syndromes in vulnerable older people who live at home (Dutch EASYcare Study). J Gerontol A Biol Sci Med Sci, 2008. 63(3): p. 283-90.
119. Muller, M., et al., Effects of dehydroepiandrosterone and atamestane supplementation on frailty in elderly men. Journal of Clinical Endocrinology & Metabolism, 2006. 91(10): p. 3988-3991.
120. Muntinga, M.E., et al., Implementing the chronic care model for frail older adults in the Netherlands: study protocol of ACT (frail older adults: care in transition). BMC Geriatrics, 2012. 12: p. 19.
121. Murayama, H., et al., The Hatoyama Cohort Study: design and profile of participants at baseline. Journal of Epidemiology, 2012. 22(6): p. 551-8.
122. Murphy, S.L., C.S. Williams, and T.M. Gill, Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons. Journal of the American Geriatrics Society, 2002. 50(3): p. 516-520.

123. Naik, A.D., et al., Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct home assessments. The Journal of the American Board of Family Medicine, 2010. 23(5): p. 614-621.
124. Oida, Y., et al., Effects of a 5-year exercise-centered health-promoting programme on mortality and ADL impairment in the elderly. Age & Ageing, 2003. 32(6): p. 585-92.
125. Ottenbacher, K.J., et al., Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly. American Journal of Public Health, 2009. 99(4): p. 673-9.
126. Ottenbacher, K.J., et al., Frailty in older Mexican Americans. Journal of the American Geriatrics Society, 2005. 53(9): p. 1524-31.
127. Paw, C.A., et al., Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial. Archives of Physical Medicine and Rehabilitation, 2001. 82(6): p. 811-817.
128. Peduzzi, P., et al., Improved self-confidence was a mechanism of action in two geriatric trials evaluating physical interventions. Journal of Clinical Epidemiology, 2007. 60(1): p. 94-102.
129. Penninx, B.W., et al., Anemia is associated with disability and decreased physical performance and muscle strength in the elderly. Journal of the American Geriatrics Society, 2004. 52(5): p. 719-724.
130. Peterson, M.J., et al., Effect of telephone exercise counseling on frailty in older veterans: project LIFE. American journal of men's health, 2007. 1(4): p. 326-334.
131. Quinn, T.J., et al., Functional assessment in older people. Bmj, 7821. 343(7821).
132. Rao, S.S., Prevention of falls in older patients. American Family Physician, 2005. 72(1): p. 81-8.
133. Rassen, A.G., Seniors-at-home: a case management program for frail elders. Journal of Clinical Outcomes Management, 2003. 10(11): p. 603-607.
134. Ravaglia, G., et al., Development of an easy prognostic score for frailty outcomes in the aged. Age and ageing, 2008. 37(2): p. 161-166.
135. Rochat, S., et al., Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project. Age & Ageing, 2010. 39(2): p. 228-33.
136. Rothman, M.D., L. Leo-Summers, and T.M. Gill, Prognostic Significance of Potential Frailty Criteria. Journal of the American Geriatrics Society, 2008. 56(12): p. 2211-2216.
137. Rouge Bugat, M.E., et al., Detecting Frailty in Primary Care: A Major Challenge for Primary Care Physicians. Journal of the American Medical Directors Association, 2012. 13(8): p. 669-672.
138. Saliba, D., et al., The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community. Journal of the American Geriatrics Society, 2001. 49(12): p. 1691-9.
139. Sarkisian, C.A., et al., Modifiable risk factors predict functional decline among older women: a prospectively validated clinical prediction tool. Journal of the American Geriatrics Society, 2000. 48(2): p. 170-178.
140. Schnelle, J.F., et al., Evaluation of two fatigability severity measures in elderly adults. Journal of the American Geriatrics Society, 2012. 60(8): p. 1527-33.

141. Schnittger, R.I.B., et al., Psychological distress as a key component of psychosocial functioning in community-dwelling older people. Aging and Mental Health, 2012. 16(2): p. 199-207.
142. Seidel, D., C. Brayne, and C. Jagger, Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living. Age and Ageing, 2011. 40(4): p. 463-469.
143. Shinkai, S., et al., Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up. Geriatrics & Gerontology International, 2003. 3: p. S31-S39.
144. Sousa, A.C., et al., Frailty syndrome and associated factors in community-dwelling elderly in Northeast Brazil. Arch Gerontol Geriatr, 2012. 54(2): p. e95-e101.
145. St John, P.D., S.L. Tyas, and P.R. Montgomery, Life satisfaction and frailty in community-based older adults: cross-sectional and prospective analyses. International Psychogeriatrics, 2013. 25(10): p. 1709-1716.
146. Stookey, J.D., et al., Plasma hypertonicity: another marker of frailty? Journal of the American Geriatrics Society, 2004. 52(8): p. 1313-20.
147. Stuck, A.E., et al., A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission. Archives of internal medicine, 2000. 160(7): p. 977.
148. Subra, J., et al., The integration of frailty into clinical practice: preliminary results from the Gerontopole. Journal of Nutrition, Health & Aging, 2012. 16(8): p. 714-20.
149. Suzuki, M., et al., The relationship between fear of falling, activities of daily living and quality of life among elderly individuals. Nursing and Health Sciences, 2002. 4(4): p. 155-161.
150. Suzuki, T., et al., Association of quantitative calcaneal ultrasound with long-term care service utilization in elderly women: A cross-sectional population-based study. Osteoporosis International, 2010. 21: p. S281.
151. Szanton, S.L., et al., Socioeconomic status is associated with frailty: the Women's Health and Aging Studies. Journal of epidemiology and community health, 2010. 64(01): p. 63-67.
152. Thomas, R., et al., Can they keep going on their own? A four-year randomized trial of functional assessments of community residents. Canadian Journal on Aging, 2007. 26(4): p. 379-90.
153. Upatising, B., et al., Effects of home telemonitoring on transitions between frailty states and death for older adults: A randomized controlled trial. 2013, DOVE Medical Press Ltd.: PO Box 300-008, Albany, Auckland, New Zealand. p. 145-151.
154. van Hout, H.P., et al., Prevention of adverse health trajectories in a vulnerable elderly population through nurse home visits: a randomized controlled trial [ISRCTN05358495]. J Gerontol A Biol Sci Med Sci, 2010. 65(7): p. 734-42.
155. van Lier, A.M. and H. Payette, Determinants of handgrip strength in free-living elderly at risk of malnutrition. Disability and Rehabilitation, 2003. 25(20): p. 1181-1186.
156. Vass, M., et al., Preventive home visits to older home-dwelling people and different functional decline patterns. European Journal of Ageing, 2007. 4(3): p. 107-113.
157. Vass, M., et al. A feasible model for prevention of functional decline in older home-dwelling people--the GP role. A municipality-randomized intervention trial. Family practice, 2009. 26, 56-64 DOI: 10.1093/fampra/cmn094.

158. Vaz Fragoso, C.A., et al., Sleep-wake disturbances and frailty in community-living older persons. Journal of the American Geriatrics Society, 2009. 57(11): p. 2094-100.
159. Villareal, D.T., et al., Weight loss, exercise, or both and physical function in obese older adults. New England Journal of Medicine, 2011. 364(13): p. 1218-1229.
160. Weaver, G.D., et al., Pain and Disability in Older Mexican-American Adults. Journal of the American Geriatrics Society, 2009. 57(6): p. 992-999.
161. Woo, J., J. Leung, and J.E. Morley, Comparison of Frailty Indicators Based on Clinical Phenotype and the Multiple Deficit Approach in Predicting Mortality and Physical Limitation. Journal of the American Geriatrics Society, 2012. 60(8): p. 1478-1486.
162. Xue, Q.-L., et al., Life-Space Constriction, Development of Frailty, and the Competing Risk of Mortality The Women's Health and Aging Study I. American journal of epidemiology, 2008. 167(2): p. 240-248.
163. Yamada, M., et al., Community-based exercise program is cost-effective by preventing care and disability in Japanese frail older adults. Journal of the American Medical Directors Association, 2012. 13(6): p. 507-11.
164. Rice, P.L. and Ezzy, D., Qualitative research methods: A health focus. 1999: Oxford University Press Melbourne.
165. World Health Organization, The International Classification of Functioning, Disability and Health (ICF). 2001 [accessed 14/01/2014]; Available from: http://www.who.int/classifications/icf/en/.
166. Grimmer, K., et al., Additional measures do not improve the diagnostic accuracy of the Hospital Admission Risk Profile for detecting downstream quality of life in community-dwelling older people presenting to a hospital emergency department.
167. Commonwealth of Australia, Health assessment for people aged 75 years and older. [updated 4 Dec 2013; accessed 9 Jan 2014]; Department of Health, Editor. Australia; Available from: http://www.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare_mbsitem_75andolder.
168. Martin, F. Comprehensive Assessment of the Frail Older Patient. [created 8 Jan 2010; accessed 20 Dec 2013]; Available from: http://www.bgs.org.uk/index.php/topresources/publicationfind/goodpractice/195-gpgcgassessment.
169. North Bristol Trust, Medicine for Older People - Outpatients [accessed on 20 Dec 2013] Available from: http://www.nbt.nhs.uk/our-services/a-z-services/medicine-older-people/medicine-older-people-outpatients.
170. Nottingham University Hospitals NHS Trust, Home-based Comprehensive Assessment for Frail Older People. [accessed on 20 Dec 2013]; Available from: https://www.nuh.nhs.uk/media/1186045/nuh_cp_a1posters_v7_-_low_res_3.pdf.
171. Imperial College Healthcare NHS Trust, Elderly medicine. [accessed 20 Dec 2013; copyright 2014]; Available from: http://www.imperial.nhs.uk/services/elderlymedicine/index.htm.
172. Ellis, G. and Langhorne, P., Comprehensive geriatric assessment for older hospital patients. British medical bulletin, 2005. 71(1): p. 45-59.

173. The Canadian Geriatrics Society Student Site, Tools & Guidelines. [accessed on 20 Dec 2013; copyright 2014]; Available from: http://canadiangeriatrics.ca/students/index.cfm/resources/tools-guidelines/.
174. Victorian Order of Nurses, Caregiving Guide - Geriatric assessments. [accessed 20 Dec 2013; copyright 2009]; Available from: http://www.von.ca/en/caregiver-guide/healthinfosupportservices-geriatricassessments.aspx?guide=3.
175. The Canadian Geriatrics Society, [accessed 20 Dec 2013; copyright 2014]; Available from: http://canadiangeriatrics.ca/default/.
176. National initiative for the Care of the Elderly, Core Competencies (Learning Outcomes) for Medical Students in Canada. [accessed 20 Dec 2013]; Available from: http://www.nicenet.ca/resources.
177. St Joseph's Care Group, Specialized Seniors' Programs - Geriatric Assessment Program. [accessed 20 Dec 2013; copyright 2014].
178. Geriatric Medicine Section of the European Union of Medical Specialists, Situation of Geriatrics in Austria. [accessed 20 Dec 2013]; Available from: http://www.uemsgeriatricmedicine.org/uems1/austria1.asp.
179. The University of Iowa, Geriatric Assessment Tools. [accessed 20 Dec 2013; copyright 2002-2014]; Available from: http://www.healthcare.uiowa.edu/igec/tools/.
180. American Family Physician, Geriatric Assessment. [created on 1 Jan 2011; accessed 20 Dec 2013]; Available from: http://www.aafp.org/afp/2011/0101/p48.html.
181. Gambert, S.R., Comprehensive Geriatric Assessment: A Multidimensional Process Designed to Assess and Elderly Person's Functional Ability, Physical Health, Cognitive and Mental Health, and Socio-Environmental Situation. Am Soc Nephrol, 2009.
182. Hermes, S.A., Geriatric Assessment Tools. [accessed 20 Dec 2013]: USA.
183. University Hospitals Case Medical Center, Geriatric Assessment Program. [accessed 20 Dec 2013]; Available from: http://www.uhhospitals.org/case/services/geriatric-services/services/geriatric-assessment-program.
184. Manila Doctors Hospital, Geriatric Multidisciplinary Clinic. [accessed 20 Dec 2013; copyright 2012]; Available from: http://www.maniladoctors.com.ph/geriatric-multidisciplinary-clinic/.
185. St Luke's Medical Center, Geriatric Center. [accessed 20 Dec 2013; copyright 2013]; Available from: http://www.stlukesmedicalcenter.com.ph/aboutus/centers/geriatric-center.
186. Tan Tock Seng Hospital, Geriatric Assessment Clinic (Geriatric Medicine). [accessed 20 Dec 2013; copyright 2014]; Available from: http://www.ttsh.com.sg/patient-guide/find-care/clinics/page.aspx?clid=43.
187. Luk, J.K., Or, K.H., and Woo, J., Using the comprehensive geriatric assessment technique to assess elderly patients. Hong Kong Medical Journal, 2000. 6(1): p. 93-98.
188. GovHK, Health Care for the Elderly. [updated Nov 2013; accessed 20 Dec 2013]; Available from: http://www.gov.hk/en/residents/health/healthadvice/healthcare/elderlyhealth.htm.
189. Practising Geriatrics in the Ageing Community, in Asia Pacifics Geriatrics Conference. 2012. Hong Kong.
190. Gold Age Retirement Homes and Hospitals, Geriatric Hospital. [accessed 20 Dec 2013]; Available from: http://www.goldage.in/geriatric-hospital.php.

191. Heritage Medical Centre, Medical services offered. [accessed 20 Dec 2013; copyright 2012]; Available from: http://www.heritagehealthcareindia.com/about-heritage-medical-centre.html.
192. Mount Sinai Beth Israel, Senior Health. [accessed 20 Dec 2013; copyright 2014]; Available from: http://www.wehealny.org/services/bi_seniorhealth/ourExpertise.html.
193. Hadassah Medical Center, Geriatrics. [accessed 20 Dec 2013]; Available from: http://www.hadassah-med.com/medical-care/clinics/geriatrics.aspx.
194. Ward, K.T., et al., Comprehensive Geriatric Assessment. 2011.

APPENDICES

Appendix 1

Medline search strategy.

Functional decline in community-dwelling older people and the Medicare 75+ Health Assessment

Database	Search no#	Search terms	Hits
Medline	1.	exp Aging/	203780
	2.	exp Aged/	2356615
	3.	exp Geriatrics/	26542
	4.	Age# OR aging OR Elder# OR Geriatric# OR old OR gerontology OR old people OR old old OR oldest old OR older adult OR aged 75 and over OR (old# ADJ5 people)	3551246
	5.	1-4/ OR	3679853
	6.	exp Prognosis/	1103905
	7.	exp Risk Assessment/	180678
	8.	exp Geriatric Assessment/	18709
	9.	exp Disability Evaluation/	40013
	10.	Prognosis or Predic# or Screen# or Identif# or assess# or 75+ assessment or Risk assessment or geriatric assessment or disability evaluation or (health ADJ5 assess#) or (geriatric# ADJ5 assess#)	1409546
	11.	6-10/OR	2061877
	12.	exp "Activities of Daily Living"/	51882
	13.	exp "Quality of Life"/	119649
	14.	exp Independent Living/	927
	15.	functional decline or Activities of daily living or ADL or ADL decline or functional status or functional status decline or decreased physical function or quality of life or QoL or aging in place or active aging or aging at home or physical function or (function# ADJ5 decline)	261715
	16.	12-15/OR	262559
	17.	exp Frail Elderly/	6730
	18.	Frail# or frailty or frail elderly or frail older people	10069
	19.	17-18/OR	10069
	20.	exp General Practice/	65495
	21.	exp Family Practice/	62153
	22.	exp Nurse Practitioners/	15335

	23.	exp Health Services for the Aged/ or exp Community Health Services/ or exp Community Health Nursing/	508562
	24.	exp Home Care Services/	39883
	25.	General practice or family practice or GP Plus or GP or general practitioner or practice nurse or community care or 75+ Health Assessment Medicare item or community based or community health service or home care service or preventative health service or home-based or Enablement or empowering older people or age-friendly or independence or independent living or (preventative ADJ5 care) or (social ADJ5 (intervention OR support OR isolation OR program)) or (preventative ADJ5 care)	267473
	26.	20-25/OR	742785
	27.	exp Child/	1553847
	28.	exp Middle Aged/	3344437
	29.	Child# or middle ag#	31469
	30.	27-29/OR	4585739
	31.	5, 11, 16, 19, 26/AND	579
	32.	31 NOT 30	495

Appendix 2

Frequency of constructs measured in the literature

CONSTRUCT	NUMBER TIMES MEASURED	DOMAIN (colour coded)
Heart rate	1	
Arterial stiffness	1	
Plasma tonicity	1	
Anaemia	1	
Hormone levels	1	
Unaddressed health issues	1	
Exercise history	1	
Health care needs	1	
Hospitalisations (risk)	1	
Emergency Department visits (frequency)	1	
Hormone use	1	
Housing	1	
Oral function/health	1	
Age-related macular degeneration	1	
Step length	1	
Coordination	1	
Sensation at the heel	1	
Sleep-disordered breathing	1	
Self-reported foot and leg problems	1	
Intellectual activities (eg reading, paying attention to news etc)	1	
Forgetfulness	1	
Need for power of attorney	1	
Decision making/reasoning	1	
Loneliness	1	
Wellbeing	1	
Dissatisfaction with strength and endurance	1	
Bathing	1	
Help with Personal finance	1	
Deteriorating personal hygiene	1	
Negotiating obstacles	1	
Purpose in life	1	
Seclusion	1	
Transportation means	1	
Losses	1	
Environment safety	1	
Living space	1	
Weight gain	1	

Fat mass	1	
Fat free mass	1	
Skeletal muscle mass	1	
Loss of height since age 25	1	
Sarcopenia	1	
Intensity of service use	1	
Pattern of missed appointments	1	
Receiving preventive home visits	1	
Blood pressure	2	
Bone mineral density	2	
Vaccinations in previous year	2	
Smoking status/history	2	
Alcohol intake	2	
Fatigue	2	
Anxiety	2	
AADLs	2	
Activity avoidance	2	
Height	2	
Calf circumference	2	
Cardiovascular function (postural hypotension)	3	
blood plasma markers (IL-6, Neopterin, higher blood beta2 microglobulin level, HDL cholesterol)	3	
Respiration	3	
Fear of falling	3	
Extent of service use	3	
Contact with GP	3	
Sleep	4	
Pain	4	
Falls- risk	4	
Hospitalisation in the last year (frequency)	4	
Hearing	4	
Near vision	4	
Distance vision	4	
Upper body strength	4	
Physical activity levels	4	
Flexibility	4	
Pain	4	
Psychological distress	4	
Ability to climb stairs	4	
Medications (number of)	5	
Marital status	5	
Memory	5	

Continence	5	
Health-related quality of life	5	
Social involvement/engagement/vulnerability	5	
Weight loss	5	
Falls- number	6	
Self-perception of health	6	
Living status	7	
Exhaustion/energy	7	
Financial status	8	
Socioeconomic status	8	
BMI	8	
Lower body strength	9	
Nutritional status	10	
Level of education	10	
Gender	10	
Multidimensional Functional abilities	10	
Rising from a chair	12	
Grip strength	13	
Balance (static, dynamic)	13	
Age	15	
Multidimensional Physical abilities	16	
Depression	16	
Morbidity (co/multi etc)	17	
Mobility	19	
Cognitive functioning	23	
Gait speed	25	
iADLs	39	
ADLs	58	
Frailty	59	

Key:

Medical status	Demographics	Performance capacity	anthropometry	Service use	Participation

Appendix 3

Table of constructs and studies utilising them

Construct measured	Reference
Domain: Medical status;	
Sub domain: Biological Systems (Within Person)	
Cardiovascular function (postural hypotension)	• Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39.
Blood pressure	• Doba, N., Y. Tokuda, N. E. Goldstein, T. Kushiro and S. Hinohara (2012). "A pilot trial to predict frailty syndrome: The Japanese Health Research Volunteer Study." Experimental Gerontology 47(8): 638-643. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Heart rate	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Arterial stiffness	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Plasma tonicity	• Stookey, J. D., J. L. Purser, C. F. Pieper and H. J. Cohen (2004). "Plasma hypertonicity: another marker of frailty?" Journal of the American Geriatrics Society 52(8): 1313-1320.
Anaemia	• Penninx, Brenda WJH, et al. "Anemia is associated with disability and decreased physical performance and muscle strength in the elderly." Journal of the American Geriatrics Society 52.5 (2004): 719-724.
Hormone levels	• Hyde, Zoë, et al. "Low free testosterone predicts frailty in older men: the health in men study." Journal of Clinical Endocrinology & Metabolism 95.7 (2010): 3165-3172.
blood plasma markers (IL-6, Neopterin, higher blood beta2 microglobulin level, HDL cholesterol)	• Landi, F., A. Russo, M. Cesari, M. Pahor, R. Bernabei and G. Onder (2007). "HDL-cholesterol and physical performance: Results from the ageing and longevity study in the sirente geographic area (ilSIRENTE Study)." Age and Ageing 36(5): 514-520. • Leng, S. X., X. Tian, A. Matteini, H. Li, J. Hughes, A. Jain, J. D. Walston and N. S. Fedarko (2011). "IL-6-independent association of elevated

	serum neopterin levels with prevalent frailty in community-dwelling older adults." Age & Ageing 40(4): 475-481. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39.
Respiration	• Binder, Ellen F., et al. "Effects of Exercise Training on Frailty in Community-Dwelling Older Adults: Results of a Randomized, Controlled Trial." Journal of the American Geriatrics Society 50.12 (2002): 1921-1928. • Carr, D. B., K. Flood, K. Steger-May, K. B. Schechtman and E. F. Binder (2006). "Characteristics of frail older adult drivers." Journal of the American Geriatrics Society 54(7): 1125-1129. • Villareal, Dennis T., et al. "Weight loss, exercise, or both and physical function in obese older adults." New England Journal of Medicine 364.13 (2011): 1218-1229.
Bone mineral density	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Suzuki, T., H. Yoshida, S. Yoshida and K. Nonaka (2010). "Association of quantitative calcaneal ultrasound with long-term care service utilization in elderly women: A cross-sectional population-based study." Osteoporosis International 21: S281.
Sub domain: Manifestations	
Morbidity (co/multi etc)	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28. • Chen, Chin-Ying, et al. "The prevalence of subjective frailty and factors associated with frailty in Taiwan." Archives of gerontology and geriatrics 50 (2010): S43-S47. • Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • Garcia-Garcia, F. J., G. Gutierrez Avila, A. Alfaro-Acha, M. S. Amor Andres, M. De Los Angeles De La Torre Lanza, M. V. Escribano Aparicio, S. Humanes Aparicio, J. L. Larrion Zugasti, M. Gomez-Serranillo Reus, F. Rodriguez-Artalejo, L. Rodriguez-Manas and G. Toledo Study (2011). "The prevalence of frailty syndrome in an older

	population from Spain. The Toledo Study for Healthy Aging." Journal of Nutrition, Health & Aging 15(10): 852-856. • Jürschik, P., C. Nunin, T. Botigue, M. A. Escobar, A. Lavedan and M. Viladrosa (2012). "Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey." Archives of Gerontology & Geriatrics 55(3): 625-631. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Murphy, S. L., C. S. Williams and T. M. Gill (2002). "Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons." Journal of the American Geriatrics Society 50(3): 516-520. • Ottenbacher, K. J., J. E. Graham, S. Al Snih, M. Raji, R. Samper-Ternent, G. V. Ostir and K. S. Markides (2009). "Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly." American Journal of Public Health 99(4): 673-679. • Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233. • Sarkisian, Catherine A., et al. "Modifiable risk factors predict functional decline among older women: a prospectively validated clinical prediction tool." Journal of the American Geriatrics Society 48.2 (2000): 170-178. • Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Sousa, A. C., R. C. Dias, A. C. Maciel and R. O. Guerra (2012). "Frailty syndrome and associated factors in community-dwelling elderly in Northeast Brazil." Arch Gerontol Geriatr 54(2): e95-e101. • Stuck, A. E., et al. (2000). "A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission." Archives of internal medicine 160(7): 977. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Unaddressed health issues	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Nutritional status	• Ballard, J., M. Mooney and O. Dempsey (2013). "Prevalence of frailty-related risk factors in older adults seen by community nurses." Journal of Advanced Nursing 69(3): 675-684. • Bandinelli, S., F. Lauretani, V. Boscherini, F. Gandi, M. Pozzi, A. M. Corsi, B. Bartali, R. M. Lova, J. M. Guralnik and L. Ferrucci (2006). "A randomized, controlled trial of disability prevention in frail older patients screened in primary care: the FRASI study. Design and

	baseline evaluation." Aging-Clinical & Experimental Research 18(5): 359-366. • Bollwein, J., R. Diekmann, M. J. Kaiser, J. M. Bauer, W. Uter, C. C. Sieber and D. Volkert (2013). "Dietary quality is related to frailty in community-dwelling older adults." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 68(4): 483-489. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Li, I. C., Y.-C. Chen and H.-T. Kuo (2005). "The health status and health promotion behavior of low-income elderly in the Taipei area." Journal of Nursing Research 13(4): 305-312. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Pain	• Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377. • Landi, F., A. Russo, R. Liperoti, P. Danese, E. Maiorana, M. Pahor, R. Bernabei and G. Onder (2009). "Daily Pain and Functional Decline Among Old-Old Adults Living in the Community: Results from the ilSIRENTE Study." Journal of Pain and Symptom Management 38(3): 350-357. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Weaver, G. D., Y. F. Kuo, M. A. Raji, S. Al Snih, L. Ray, E. Torres and K. J. Ottenbacher (2009). "Pain and disability in older Mexican-American adults." Journal of the American Geriatrics Society 57(6): 992-999.
Falls- number	• Barr, E. L., C. Browning, S. R. Lord, H. B. Menz and H. Kendig (2005). "Foot and leg problems are important determinants of functional status in community dwelling older people." Disabil Rehabil 27(16): 917-923.

	• Bleijenberg, N., V. H. ten Dam, I. Drubbel, M. E. Numans, N. J. de Wit and M. J. Schuurmans (2013). "Development of a Proactive Care Program (U-CARE) to Preserve Physical Functioning of Frail Older People in Primary Care." Journal of Nursing Scholarship 45(3): 230-237. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Suzuki, M., N. Ohyama, K. Yamada and M. Kanamori (2002). "The relationship between fear of falling, activities of daily living and quality of life among elderly individuals." Nursing and Health Sciences 4(4): 155-161.
Falls- risk	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Ballard, J., M. Mooney and O. Dempsey (2013). "Prevalence of frailty-related risk factors in older adults seen by community nurses." Journal of Advanced Nursing 69(3): 675-684. • Ehrlich, P. L. (2006). "Caring for the frail elderly in the home: a multidisciplinary approach." Home Health Care Management & Practice 19(1): 38-44. • Rao, S. S. (2005). "Prevention of falls in older patients." American Family Physician 72(1): 81-88.
Exercise history	• de Gonzalo-Calvo, D., B. Fernandez-Garcia, B. de Luxan-Delgado, S. Rodriguez-Gonzalez, M. Garcia-Macia, F. M. Suarez, J. J. Solano, M. J. Rodriguez-Colunga and A. Coto-Montes (2012). "Long-term training induces a healthy inflammatory and endocrine emergent biomarker profile in elderly men." Age 34(3): 761-771.
Health care needs	• Bleijenberg, N., V. H. ten Dam, I. Drubbel, M. E. Numans, N. J. de Wit and M. J. Schuurmans (2013). "Development of a Proactive Care Program (U-CARE) to Preserve Physical Functioning of Frail Older People in Primary Care." Journal of Nursing Scholarship 45(3): 230-237.
Hospitalisation in the last year (frequency)	• Bilotta, C., A. Case, P. Nicolini, S. Mauri, M. Castelli and C. Vergani (2010). "Social vulnerability, mental health and correlates of frailty in older outpatients living alone in the community in Italy." Aging & Mental Health 14(8): 1024-1036. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and

	health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39.
Hospitalisations (risk)	• Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145.
Emergency Department visits (frequency)	• Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.
Medications (number of)	• Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Stuck, A. E., et al. (2000). "A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission." Archives of internal medicine 160(7): 977.
Vaccinations in previous year	• McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Hormone use	• Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Smoking status/history	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Alcohol intake	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Frailty	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Andrew, M. K., A. Mitnitski, S. A. Kirkland and K. Rockwood (2012). "The impact of social vulnerability on the survival of the fittest older adults." Age & Ageing 41(2): 161-165. • Apovian, C. M., C. M. Frey, G. C. Wood, J. Z. Rogers, C. D. Still and G. L. Jensen (2002). "Body mass index and physical function in older women." Obesity Research 10(8): 740-747. • Armi, F., E. Guilley and C. J. L. d'Epinay (2008). "Health: Support provided and received in advanced old age. A five-year follow-up." Zeitschrift für Gerontologie und Geriatrie 41(1): 56-62. • Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Ávila-Funes, José Alberto, et al. "Cognitive Impairment Improves the Predictive Validity of the Phenotype of Frailty for Adverse Health Outcomes: The Three-City Study." Journal of the American Geriatrics Society 57.3 (2009): 453-461. • Bandinelli, S., F. Lauretani, V. Boscherini, F. Gandi, M. Pozzi, A. M. Corsi, B. Bartali, R. M. Lova, J. M. Guralnik and L. Ferrucci (2006). "A randomized, controlled trial of disability prevention in frail older patients screened in primary care: the FRASI study. Design and baseline evaluation." Aging-Clinical & Experimental Research 18(5): 359-366. • Bauer, J. M. and C. C. Sieber (2008). "Sarcopenia and frailty: a clinician's controversial point of view." Experimental Gerontology 43(7): 674-678. • Bennett, A. K. (2004). "Older age underwriting: frisky vs frail." Journal of Insurance Medicine (Seattle) 36(1): 74-83. • Bilotta, C., A. Bowling, A. Case, P. Nicolini, S. Mauri, M. Castelli and C. Vergani (2010). "Dimensions and correlates of quality of life according to frailty status: a cross-sectional study on community-dwelling older adults referred to an outpatient geriatric service in Italy." Health & Quality of Life Outcomes 8: 56. • Bilotta, C., A. Case, P. Nicolini, S. Mauri, M. Castelli and C. Vergani (2010). "Social vulnerability, mental health and correlates of frailty in older outpatients living alone in the community in Italy." Aging & Mental Health 14(8): 1024-1036. • Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012b). "Frailty syndrome diagnosed according to the Study of

Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28.

- Bleijenberg, N., I. Drubbel, V. H. Dam, M. E. Numans, M. J. Schuurmans and N. J. Wit (2012) "Proactive and integrated primary care for frail older people: design and methodological challenges of the Utrecht primary care PROactive frailty intervention trial (U-PROFIT)." BMC geriatrics 12, 16 DOI: 10.1186/1471-2318-12-16.
- Bollwein, J., R. Diekmann, M. J. Kaiser, J. M. Bauer, W. Uter, C. C. Sieber and D. Volkert (2013). "Dietary quality is related to frailty in community-dwelling older adults." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 68(4): 483-489.
- Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377.
- Boyle, P. A., A. S. Buchman, R. S. Wilson, S. E. Leurgans and D. A. Bennett (2010). "Physical Frailty Is Associated with Incident Mild Cognitive Impairment in Community-Based Older Persons." Journal of the American Geriatrics Society 58(2): 248-255.
- Brown M, Sinacore DR, Binder EF et al. Physical and performance measures for the identification of mild to moderate frailty. J Gerontol A Biol Sci Med Sci 2000;55A:M350–M355.
- Brown, M. (2009). "Too many weak days--diagnosis: physical frailty." Missouri Medicine 106(2): 121-125; quiz 125-126.
- Castrejon-Perez, R. C., S. A. Borges-Yanez, L. M. Gutierrez-Robledo and J. A. Avila-Funes (2012). "Oral health conditions and frailty in Mexican community-dwelling elderly: a cross sectional analysis." BMC Public Health 12: 773.
- Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223.
- Chang, Y. C., C. C. Lin, P. H. Lin, C. C. Chen, R. G. Lee, J. S. Huang and T. H. Tsai (2013). "eFurniture for home-based frailty detection using artificial neural networks and wireless sensors." Med Eng Phys 35(2): 263-268.
- Chang, Y.-W., W.-L. Chen, F.-G. Lin, W.-H. Fang, M.-Y. Yen, C.-C. Hsieh and T.-W. Kao (2012). "Frailty and its impact on health-related quality of life: a cross-sectional study on elder community-dwelling preventive health service users." PLoS ONE [Electronic Resource] 7(5): e38079.
- Chen, Chin-Ying, et al. "The prevalence of subjective frailty and factors associated with frailty in Taiwan." Archives of gerontology and geriatrics 50 (2010): S43-S47.
- Cigolle, C. T., M. B. Ofstedal, Z. Tian and C. S. Blaum (2009). "Comparing Models of Frailty: The Health and Retirement Study." Journal of the American Geriatrics Society 57(5): 830-839.
- Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480.

- Daniels, R., E. van Rossum, S. Metzelthin, W. Sipers, H. Habets, S. Hobma, W. van den Heuvel and L. de Witte (2011). "A disability prevention programme for community-dwelling frail older persons." Clinical Rehabilitation 25(11): 963-974.
- De Lepeleire, J., S. Iliffe, E. Mann and J. M. Degryse (2009). "Frailty: An emerging concept for general practice." British Journal of General Practice 59(562): 364-369.
- Drubbel, I., et al. (2013). "Identifying frailty: do the Frailty Index and Groningen Frailty Indicator cover different clinical perspectives? a cross-sectional study." BMC family practice 14(1): 64.
- Ensrud, K. E., S. K. Ewing, B. C. Taylor, H. A. Fink, K. L. Stone, J. A. Cauley, J. K. Tracy, M. C. Hochberg, N. Rodondi and P. M. Cawthon (2007). "Frailty and risk of falls, fracture, and mortality in older women: The study of osteoporotic fractures." Journals of Gerontology - Series A Biological Sciences and Medical Sciences 62(7): 744-751.
- Fletcher, P. C., D. M. Guthrie, K. Berg and J. P. Hirdes (2010). "Risk factors for restriction in activity associated with fear of falling among seniors within the community." Journal of patient safety 6(3): 187-191.
- Gill, T. M., E. A. Gahbauer, H. G. Allore and L. Han "Transitions between frailty states among community-living older persons." Archives of Internal Medicine 2006, 166(4): 418-423.
- Gu, D., M. E. Dupre, J. Sautter, H. Zhu, Y. Liu and Z. Yi (2009). "Frailty and mortality among Chinese at advanced ages." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 64(2): 279-289.
- Gurina, N. A., E. V. Frolova and J. M. Degryse (2011). "A roadmap of aging in Russia: The prevalence of frailty in community-dwelling older adults in the St. Petersburg district—The “crystal” Study." Journal of the American Geriatrics Society 59(6): 980-988.
- Heppenstall, C. P., T. J. Wilkinson, H. C. Hanger and S. Keeling (2009). "Frailty: dominos or deliberation?" New Zealand Medical Journal 122(1299): 42-53.
- Hoogendijk, E. O., M. E. Muntinga, K. M. van Leeuwen, H. E. van der Horst, D. J. Deeg, D. H. Frijters, L. A. Hermsen, A. P. Jansen, G. Nijpels and H. P. van Hout (2013). "Self-perceived met and unmet care needs of frail older adults in primary care." Arch Gerontol Geriatr.
- Kiely, D. K., L. A. Cupples and L. A. Lipsitz (2009). "Validation and comparison of two frailty indexes: The MOBILIZE Boston Study." Journal of the American Geriatrics Society 57(9): 1532-1539.
- Lacas, A. and K. Rockwood (2012). "Frailty in primary care: A review of its conceptualization and implications for practice." BMC Medicine 10(4).
- Lin, C.-C., C.-I. Li, N.-H. Meng, W.-Y. Lin, C.-S. Liu, C.-H. Lin, C.-K. Chang, Y.-D. Lee, C.-C. Lee and T.-C. Li (2013). "Frailty and its associated factors in an elderly Taiwanese metropolitan population." Journal of the American Geriatrics Society 61(2): 292-294.
- Malaguarnera, M., M. Vacante, P. M. Frazzetto and M. Motta (2013). "What is the frailty in elderly? Value and significance of the multidimensional assessments." Archives of Gerontology & Geriatrics 56(1): 23-26.
- McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the

community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15.

- Muntinga, M. E., E. O. Hoogendijk, K. M. van Leeuwen, H. P. J. van Hout, J. W. R. Twisk, H. E. van der Horst, G. Nijpels and A. P. D. Jansen (2012). "Implementing the chronic care model for frail older adults in the Netherlands: study protocol of ACT (frail older adults: care in transition)." BMC Geriatrics 12: 19.
- Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
- Ottenbacher, K. J., G. V. Ostir, M. K. Peek, S. A. Snih, M. A. Raji and K. S. Markides (2005). "Frailty in older Mexican Americans." Journal of the American Geriatrics Society 53(9): 1524-1531.
- Ottenbacher, K. J., J. E. Graham, S. Al Snih, M. Raji, R. Samper-Ternent, G. V. Ostir and K. S. Markides (2009). "Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly." American Journal of Public Health 99(4): 673-679.
- Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817.
- Peterson, Matthew J., et al. "Effect of telephone exercise counseling on frailty in older veterans: project LIFE." American journal of men's health 1.4 (2007): 326-334.
- Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
- Rouge Bugat, M. E., P. Cestac, S. Oustric, B. Vellas and F. Nourhashemi (2012). "Detecting Frailty in Primary Care: A Major Challenge for Primary Care Physicians." Journal of the American Medical Directors Association 13(8): 669-672.
- Schnelle, J. F., M. S. Buchowski, T. A. Ikizler, D. W. Durkin, L. Beuscher and S. F. Simmons (2012). "Evaluation of two fatigability severity measures in elderly adults." Journal of the American Geriatrics Society 60(8): 1527-1533.
- Schnittger, R. I. B., C. D. Walsh, A.-M. Casey, J. P. Wherton, J. E. McHugh and B. A. Lawlor (2012). "Psychological distress as a key component of psychosocial functioning in community-dwelling older people." Aging and Mental Health 16(2): 199-207.
- St John, P. D., S. L. Tyas and P. R. Montgomery (2013). "Life satisfaction and frailty in community-based older adults: cross-sectional and prospective analyses." International Psychogeriatrics 25(10): 1709-1716.
- Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
- Szanton, S. L., et al. (2010). "Socioeconomic status is associated with frailty: the Women's Health and Aging Studies." Journal of epidemiology and community health 64(01): 63-67.

	• Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145. • Vaz Fragoso, C. A., E. A. Gahbauer, P. H. Van Ness and T. M. Gill (2009). "Sleep-wake disturbances and frailty in community-living older persons." Journal of the American Geriatrics Society 57(11): 2094-2100. • Woo, J., J. Leung and J. E. Morley (2012). "Comparison of Frailty Indicators Based on Clinical Phenotype and the Multiple Deficit Approach in Predicting Mortality and Physical Limitation." Journal of the American Geriatrics Society 60(8): 1478-1486. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330. • Xue, Qian-Li, et al. "Life-Space Constriction, Development of Frailty, and the Competing Risk of Mortality The Women's Health and Aging Study I." American journal of epidemiology 167.2 (2008): 240-248. • Yamada, M., H. Arai, T. Sonoda and T. Aoyama (2012). "Community-based exercise program is cost-effective by preventing care and disability in Japanese frail older adults." Journal of the American Medical Directors Association 13(6): 507-511.
Domain: Demographics	
Age	• Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • Jürschik, P., C. Nunin, T. Botigue, M. A. Escobar, A. Lavedan and M. Viladrosa (2012). "Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey." Archives of Gerontology & Geriatrics 55(3): 625-631. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.

	• McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Ottenbacher, K. J., J. E. Graham, S. Al Snih, M. Raji, R. Samper-Ternent, G. V. Ostir and K. S. Markides (2009). "Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly." American Journal of Public Health 99(4): 673-679. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Sarkisian, Catherine A., et al. "Modifiable risk factors predict functional decline among older women: a prospectively validated clinical prediction tool." Journal of the American Geriatrics Society 48.2 (2000): 170-178. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Sousa, A. C., R. C. Dias, A. C. Maciel and R. O. Guerra (2012). "Frailty syndrome and associated factors in community-dwelling elderly in Northeast Brazil." Arch Gerontol Geriatr 54(2): e95-e101. • Vass, Mikkel, et al. "Preventive home visits to older home-dwelling people and different functional decline patterns." European Journal of Ageing 4.3 (2007): 107-113. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Level of education	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Chen, Chin-Ying, et al. "The prevalence of subjective frailty and factors associated with frailty in Taiwan." Archives of gerontology and geriatrics 50 (2010): S43-S47. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.

	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233. • Szanton, S. L., et al. (2010). "Socioeconomic status is associated with frailty: the Women's Health and Aging Studies." Journal of epidemiology and community health 64(01): 63-67. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Financial status	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Armi, F., E. Guilley and C. J. L. d'Epinay (2008). "Health: Support provided and received in advanced old age. A five-year follow-up." Zeitschrift für Gerontologie und Geriatrie 41(1): 56-62. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Szanton, S. L., et al. (2010). "Socioeconomic status is associated with frailty: the Women's Health and Aging Studies." Journal of epidemiology and community health 64(01): 63-67. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Housing	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Living status	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective

	factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Armi, F., E. Guilley and C. J. L. d'Epinay (2008). "Health: Support provided and received in advanced old age. A five-year follow-up." Zeitschrift für Gerontologie und Geriatrie 41(1): 56-62. • Chen, Chin-Ying, et al. "The prevalence of subjective frailty and factors associated with frailty in Taiwan." Archives of gerontology and geriatrics 50 (2010): S43-S47. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233. • Vass, Mikkel, et al. "Preventive home visits to older home-dwelling people and different functional decline patterns." European Journal of Ageing 4.3 (2007): 107-113.
Socioeconomic status	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Armi, F., E. Guilley and C. J. L. d'Epinay (2008). "Health: Support provided and received in advanced old age. A five-year follow-up." Zeitschrift für Gerontologie und Geriatrie 41(1): 56-62. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Szanton, S. L., et al. (2010). "Socioeconomic status is associated with frailty: the Women's Health and Aging Studies." Journal of epidemiology and community health 64(01): 63-67. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Gender	• Armi, F., E. Guilley and C. J. L. d'Epinay (2008). "Health: Support provided and received in advanced old age. A five-year follow-up." Zeitschrift für Gerontologie und Geriatrie 41(1): 56-62. • Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28. • Chen, Chin-Ying, et al. "The prevalence of subjective frailty and factors associated with frailty in Taiwan." Archives of gerontology and geriatrics 50 (2010): S43-S47. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • Gale, C. R., H. E. Syddall, H. Bergman, E. J. Brunner, C. Cooper and A. A. Sayer (2012). "Close Relationships and Risk of Frailty: The Hertfordshire Cohort Study." Journal of the American Geriatrics Society 60(2): 390-392. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Vass, Mikkel, et al. "Preventive home visits to older home-dwelling people and different functional decline patterns." European Journal of Ageing 4.3 (2007): 107-113.

Marital status	• Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15.
Domain: Performance capacity	
Sub domain: Physical	
Oral function/health	• Castrejon-Perez, R. C., S. A. Borges-Yanez, L. M. Gutierrez-Robledo and J. A. Avila-Funes (2012). "Oral health conditions and frailty in Mexican community-dwelling elderly: a cross sectional analysis." BMC Public Health 12: 773.
Hearing	• Doba, N., Y. Tokuda, N. E. Goldstein, T. Kushiro and S. Hinohara (2012). "A pilot trial to predict frailty syndrome: The Japanese Health Research Volunteer Study." Experimental Gerontology 47(8): 638-643. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Near vision	• Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166.

	• Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Distance vision	• Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Age-related macular degeneration	• Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Gait speed	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Bandinelli, S., F. Lauretani, V. Boscherini, F. Gandi, M. Pozzi, A. M. Corsi, B. Bartali, R. M. Lova, J. M. Guralnik and L. Ferrucci (2006). "A randomized, controlled trial of disability prevention in frail older patients screened in primary care: the FRASI study. Design and baseline evaluation." Aging-Clinical & Experimental Research 18(5): 359-366. • Barr, E. L., C. Browning, S. R. Lord, H. B. Menz and H. Kendig (2005). "Foot and leg problems are important determinants of functional status in community dwelling older people." Disabil Rehabil 27(16): 917-923. • Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377. • Brown M, Sinacore DR, Binder EF et al. Physical and performance measures for the identification of mild to moderate frailty. J Gerontol A Biol Sci Med Sci 2000;55A:M350–M355.

- Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187.
- Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480.
- Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27.
- Doba, N., Y. Tokuda, N. E. Goldstein, T. Kushiro and S. Hinohara (2012). "A pilot trial to predict frailty syndrome: The Japanese Health Research Volunteer Study." Experimental Gerontology 47(8): 638-643.
- Fried LP, Tangen CM, Walston J et al. Frailty in older adults: Evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56A:M146–M156.
- Gill, T. M., D. I. Baker, M. Gottschalk, P. N. Peduzzi, H. Allore and P. H. Van Ness (2004). "A prehabilitation program for the prevention of functional decline: Effect on higher-level physical function." Archives of Physical Medicine and Rehabilitation 85(7): 1043-1049. [same study as above, but more outcomes concerning physical function/decline noted]
- Giné-Garriga, Maria, et al. "The effect of functional circuit training on physical frailty in frail older adults: a randomized controlled trial." Journal of aging and physical activity 18.4 (2010): 401.
- Gobbens, R. J. and M. A. van Assen (2012). "Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire." Arch Gerontol Geriatr 55(2): 369-379. (a)
- Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431.
- Jacobson, B., B. Thompson, T. Wallace, L. Brown and C. Rial (2011). "Independent static balance training contributes to increased stability and functional capacity in community-dwelling elderly people: A randomized controlled trial." Clinical Rehabilitation 25(6): 549-556.
- Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.
- Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
- Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817.
- Peduzzi, P., Z. Guo, R. A. Marottoli, T. M. Gill, K. Araujo and H. G. Allore (2007). "Improved self-confidence was a mechanism of action

	in two geriatric trials evaluating physical interventions." Journal of Clinical Epidemiology 60(1): 94-102. • Rothman, M. D., L. Leo-Summers and T. M. Gill (2008). "Prognostic Significance of Potential Frailty Criteria." Journal of the American Geriatrics Society 56(12): 2211-2216. • Schnelle, J. F., M. S. Buchowski, T. A. Ikizler, D. W. Durkin, L. Beuscher and S. F. Simmons (2012). "Evaluation of two fatigability severity measures in elderly adults." Journal of the American Geriatrics Society 60(8): 1527-1533. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Stuck, A. E., et al. (2000). "A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission." Archives of internal medicine 160(7): 977. • Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145.
Step length	• Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817.
Mobility	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Barr, E. L., C. Browning, S. R. Lord, H. B. Menz and H. Kendig (2005). "Foot and leg problems are important determinants of functional status in community dwelling older people." Disabil Rehabil 27(16): 917-923. • Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377. • Boyle, P. A., A. S. Buchman and D. A. Bennett (2010a). "Purpose in life is associated with a reduced risk of incident disability among community-dwelling older persons." American Journal of Geriatric Psychiatry 18(12): 1093-1102. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223.

	• Clausen, T., A. O. Wilson, R. M. Molebatsi and G. Holmboe-Ottesen (2007). "Diminished mental- and physical function and lack of social support are associated with shorter survival in community dwelling older persons of Botswana." BMC Public Health 7: 144. • Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Fried LP, Tangen CM, Walston J et al. Frailty in older adults: Evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56A:M146–M156. • Gill, T. M., D. I. Baker, M. Gottschalk, P. N. Peduzzi, H. Allore and P. H. Van Ness (2004). "A prehabilitation program for the prevention of functional decline: Effect on higher-level physical function." Archives of Physical Medicine and Rehabilitation 85(7): 1043-1049. [same study as above, but more outcomes concerning physical function/decline noted] • Gill, T. M., H. G. Allore, S. E. Hardy and Z. Guo (2006). "The dynamic nature of mobility disability in older persons." Journal of the American Geriatrics Society 54(2): 248-254. • Gitlin, L. N., L. Winter, M. P. Dennis and W. W. Hauck (2008). "Variation in response to a home intervention to support daily function by age, race, sex, and education." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 63(7): 745-750. • Gobbens, R. J. and M. A. van Assen (2012). "Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire." Arch Gerontol Geriatr 55(2): 369-379. (a) • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Macklai, N. S., et al. (2013). "Prospective association of the SHARE-operationalized frailty phenotype with adverse health outcomes: evidence from 60+ community-dwelling Europeans living in 11 countries." BMC Geriatrics 13(1): 3. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166.
Upper body strength	• Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655.

	• Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • Femia, E. E., S. H. Zarit and B. Johansson (2001). "The disablement process in very late life: a study of the oldest-old in Sweden." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 56(1): P12-23. • Ottenbacher, K. J., G. V. Ostir, M. K. Peek, S. A. Snih, M. A. Raji and K. S. Markides (2005). "Frailty in older Mexican Americans." Journal of the American Geriatrics Society 53(9): 1524-1531.
Grip strength	• Bandinelli, S., F. Lauretani, V. Boscherini, F. Gandi, M. Pozzi, A. M. Corsi, B. Bartali, R. M. Lova, J. M. Guralnik and L. Ferrucci (2006). "A randomized, controlled trial of disability prevention in frail older patients screened in primary care: the FRASI study. Design and baseline evaluation." Aging-Clinical & Experimental Research 18(5): 359-366. • Brown M, Sinacore DR, Binder EF et al. Physical and performance measures for the identification of mild to moderate frailty. J Gerontol A Biol Sci Med Sci 2000;55A:M350–M355. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • Fried LP, Tangen CM, Walston J et al. Frailty in older adults: Evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56A:M146–M156. • Gobbens, R. J. and M. A. van Assen (2012). "Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire." Arch Gerontol Geriatr 55(2): 369-379. (a) • Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431. • Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8. • Muller, Majon, et al. "Effects of dehydroepiandrosterone and atamestane supplementation on frailty in elderly men." Journal of Clinical Endocrinology & Metabolism 91.10 (2006): 3988-3991. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.

	• Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145. • van Lier, A. M. and H. Payette (2003). "Determinants of handgrip strength in free-living elderly at risk of malnutrition." Disability and Rehabilitation 25(20): 1181-1186.
Lower body strength	• Bandinelli, S., F. Lauretani, V. Boscherini, F. Gandi, M. Pozzi, A. M. Corsi, B. Bartali, R. M. Lova, J. M. Guralnik and L. Ferrucci (2006). "A randomized, controlled trial of disability prevention in frail older patients screened in primary care: the FRASI study. Design and baseline evaluation." Aging-Clinical & Experimental Research 18(5): 359-366. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443. • Femia, E. E., S. H. Zarit and B. Johansson (2001). "The disablement process in very late life: a study of the oldest-old in Sweden." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 56(1): P12-23. • Giné-Garriga, Maria, et al. "The effect of functional circuit training on physical frailty in frail older adults: a randomized controlled trial." Journal of aging and physical activity 18.4 (2010): 401. • Jacobson, B., B. Thompson, T. Wallace, L. Brown and C. Rial (2011). "Independent static balance training contributes to increased stability and functional capacity in community-dwelling elderly people: A randomized controlled trial." Clinical Rehabilitation 25(6): 549-556. • Muller, Majon, et al. "Effects of dehydroepiandrosterone and atamestane supplementation on frailty in elderly men." Journal of Clinical Endocrinology & Metabolism 91.10 (2006): 3988-3991. • Ottenbacher, K. J., G. V. Ostir, M. K. Peek, S. A. Snih, M. A. Raji and K. S. Markides (2005). "Frailty in older Mexican Americans." Journal of the American Geriatrics Society 53(9): 1524-1531. • Penninx, Brenda WJH, et al. "Anemia is associated with disability and decreased physical performance and muscle strength in the elderly." Journal of the American Geriatrics Society 52.5 (2004): 719-724.
Physical activity levels	• Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8. • Rothman, M. D., L. Leo-Summers and T. M. Gill (2008). "Prognostic Significance of Potential Frailty Criteria." Journal of the American Geriatrics Society 56(12): 2211-2216. • Schnelle, J. F., M. S. Buchowski, T. A. Ikizler, D. W. Durkin, L. Beuscher and S. F. Simmons (2012). "Evaluation of two fatigability severity

	measures in elderly adults." Journal of the American Geriatrics Society 60(8): 1527-1533.
Multidimensional physical abilities	• Aguilar-Navarro, S., A. P. Navarrete-Reyes, B. H. Grados-Chavarria, J. M. A. Garcia-Lara, H. Amieva and J. A. Avila-Funes (2012). "The severity of urinary incontinence decreases health-related quality of life among community-dwelling elderly." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 67(11): 1266-1271. • Apovian, C. M., C. M. Frey, G. C. Wood, J. Z. Rogers, C. D. Still and G. L. Jensen (2002). "Body mass index and physical function in older women." Obesity Research 10(8): 740-747. • Binder, Ellen F., et al. "Effects of Exercise Training on Frailty in Community-Dwelling Older Adults: Results of a Randomized, Controlled Trial." Journal of the American Geriatrics Society 50.12 (2002): 1921-1928. • Carr, D. B., K. Flood, K. Steger-May, K. B. Schechtman and E. F. Binder (2006). "Characteristics of frail older adult drivers." Journal of the American Geriatrics Society 54(7): 1125-1129. • Chen, D. W., J. W. Chen, W. Xu, W. Liu, W. J. Du and H. J. Li (2012). "A pilot study for reliability and validity of mini-physical performance test for chinese male elders." International Journal of Gerontology 6(1): 16-19. • Gill, T. M., D. I. Baker, M. Gottschalk, P. N. Peduzzi, H. Allore and P. H. Van Ness (2004). "A prehabilitation program for the prevention of functional decline: Effect on higher-level physical function." Archives of Physical Medicine and Rehabilitation 85(7): 1043-1049. • Kim, C.-O. and K.-R. Lee (2013). "Preventive effect of protein-energy supplementation on the functional decline of frail older adults with low socioeconomic status: a community-based randomized controlled study." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 68(3): 309-316. • Landi, F., A. Russo, M. Cesari, M. Pahor, R. Bernabei and G. Onder (2007). "HDL-cholesterol and physical performance: Results from the ageing and longevity study in the sirente geographic area (ilSIRENTE Study)." Age and Ageing 36(5): 514-520. • Lang, P. O., J. P. Michel and D. Zekry (2009). "Frailty syndrome: a transitional state in a dynamic process." Gerontology 55(5): 539-549. • Matheï, C. B. P. J. (2011). "Associations Between Cytomegalovirus Infection and Functional Impairment and Frailty in the BELFRAIL Cohort." Journal of the American Geriatrics Society 59(12): 2201-2208. • Muller, Majon, et al. "Effects of dehydroepiandrosterone and atamestane supplementation on frailty in elderly men." Journal of Clinical Endocrinology & Metabolism 91.10 (2006): 3988-3991. • Penninx, Brenda WJH, et al. "Anemia is associated with disability and decreased physical performance and muscle strength in the elderly." Journal of the American Geriatrics Society 52.5 (2004): 719-724. • Quinn, T. J., K. McArthur, G. Ellis and D. J. Stott (2011). "Functional assessment in older people." Bmj 343(7821). • Saliba, D., M. Elliott, L. Z. Rubenstein, D. H. Solomon, R. T. Young, C. J. Kamberg, C. Roth, C. H. MacLean, P. G. Shekelle, E. M. Sloss and N. S. Wenger (2001). "The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community." Journal of the American Geriatrics Society 49(12): 1691-1699.

	• Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720. • Villareal, Dennis T., et al. "Weight loss, exercise, or both and physical function in obese older adults." New England Journal of Medicine 364.13 (2011): 1218-1229.
Fatigue	• Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Schnelle, J. F., M. S. Buchowski, T. A. Ikizler, D. W. Durkin, L. Beuscher and S. F. Simmons (2012). "Evaluation of two fatigability severity measures in elderly adults." Journal of the American Geriatrics Society 60(8): 1527-1533.
Coordination	• Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431.
Flexibility	• Brown M, Sinacore DR, Binder EF et al. Physical and performance measures for the identification of mild to moderate frailty. J Gerontol A Biol Sci Med Sci 2000;55A:M350–M355. • Femia, E. E., S. H. Zarit and B. Johansson (2001). "The disablement process in very late life: a study of the oldest-old in Sweden." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 56(1): P12-23. • Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431. • Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817.
Balance (static, dynamic)	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Brown M, Sinacore DR, Binder EF et al. Physical and performance measures for the identification of mild to moderate frailty. J Gerontol A Biol Sci Med Sci 2000;55A:M350–M355. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480.

	• Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Giné-Garriga, Maria, et al. "The effect of functional circuit training on physical frailty in frail older adults: a randomized controlled trial." Journal of aging and physical activity 18.4 (2010): 401. • Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431. • Jacobson, B., B. Thompson, T. Wallace, L. Brown and C. Rial (2011). "Independent static balance training contributes to increased stability and functional capacity in community-dwelling elderly people: A randomized controlled trial." Clinical Rehabilitation 25(6): 549-556. • Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817.
Rising from a chair	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Clausen, T., A. O. Wilson, R. M. Molebatsi and G. Holmboe-Ottesen (2007). "Diminished mental- and physical function and lack of social support are associated with shorter survival in community dwelling older persons of Botswana." BMC Public Health 7: 144.

	• Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480. • Gill, T. M., D. I. Baker, M. Gottschalk, P. N. Peduzzi, H. Allore and P. H. Van Ness (2004). "A prehabilitation program for the prevention of functional decline: Effect on higher-level physical function." Archives of Physical Medicine and Rehabilitation 85(7): 1043-1049. [same study as above, but more outcomes concerning physical function/decline noted] • Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431. • Jacobson, B., B. Thompson, T. Wallace, L. Brown and C. Rial (2011). "Independent static balance training contributes to increased stability and functional capacity in community-dwelling elderly people: A randomized controlled trial." Clinical Rehabilitation 25(6): 549-556. • Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8. • Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817. • Peduzzi, P., Z. Guo, R. A. Marottoli, T. M. Gill, K. Araujo and H. G. Allore (2007). "Improved self-confidence was a mechanism of action in two geriatric trials evaluating physical interventions." Journal of Clinical Epidemiology 60(1): 94-102.
Sensation at the heel	• Brown M, Sinacore DR, Binder EF et al. Physical and performance measures for the identification of mild to moderate frailty. J Gerontol A Biol Sci Med Sci 2000;55A:M350–M355.
Sleep-disordered breathing	• Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.
Pain	• Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377. • Landi, F., A. Russo, R. Liperoti, P. Danese, E. Maiorana, M. Pahor, R. Bernabei and G. Onder (2009). "Daily Pain and Functional Decline Among Old-Old Adults Living in the Community: Results from the ilSIRENTE Study." Journal of Pain and Symptom Management 38(3): 350-357. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Weaver, G. D., Y. F. Kuo, M. A. Raji, S. Al Snih, L. Ray, E. Torres and K. J. Ottenbacher (2009). "Pain and disability in older Mexican-American adults." Journal of the American Geriatrics Society 57(6): 992-999.

Self-reported foot and leg problems	• Barr, E. L., C. Browning, S. R. Lord, H. B. Menz and H. Kendig (2005). "Foot and leg problems are important determinants of functional status in community dwelling older people." Disabil Rehabil 27(16): 917-923.
Sub domain: Cognitive	
Cognitive functioning	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Ávila-Funes, José Alberto, et al. "Cognitive Impairment Improves the Predictive Validity of the Phenotype of Frailty for Adverse Health Outcomes: The Three-City Study." Journal of the American Geriatrics Society 57.3 (2009): 453-461. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Doba, N., Y. Tokuda, N. E. Goldstein, T. Kushiro and S. Hinohara (2012). "A pilot trial to predict frailty syndrome: The Japanese Health Research Volunteer Study." Experimental Gerontology 47(8): 638-643. • Ehrlich, P. L. (2006). "Caring for the frail elderly in the home: a multidisciplinary approach." Home Health Care Management & Practice 19(1): 38-44. • Femia, E. E., S. H. Zarit and B. Johansson (2001). "The disablement process in very late life: a study of the oldest-old in Sweden." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 56(1): P12-23. • Jürschik, P., C. Nunin, T. Botigue, M. A. Escobar, A. Lavedan and M. Viladrosa (2012). "Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey." Archives of Gerontology & Geriatrics 55(3): 625-631. • Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Matheï, C. B. P. J. (2011). "Associations Between Cytomegalovirus Infection and Functional Impairment and Frailty in the BELFRAIL Cohort." Journal of the American Geriatrics Society 59(12): 2201-2208. • Mehta, Kala M., Kristine Yaffe, and Kenneth E. Covinsky. "Cognitive impairment, depressive symptoms, and functional decline in older

	people." Journal of the American Geriatrics Society 50.6 (2002): 1045-1050. • Naik, Aanand D., et al. "Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct home assessments." The Journal of the American Board of Family Medicine 23.5 (2010): 614-621. • Ottenbacher, K. J., J. E. Graham, S. Al Snih, M. Raji, R. Samper-Ternent, G. V. Ostir and K. S. Markides (2009). "Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly." American Journal of Public Health 99(4): 673-679. • Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607. • Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233. • Rothman, M. D., L. Leo-Summers and T. M. Gill (2008). "Prognostic Significance of Potential Frailty Criteria." Journal of the American Geriatrics Society 56(12): 2211-2216. • Sarkisian, Catherine A., et al. "Modifiable risk factors predict functional decline among older women: a prospectively validated clinical prediction tool." Journal of the American Geriatrics Society 48.2 (2000): 170-178. • Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Stuck, A. E., et al. (2000). "A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission." Archives of internal medicine 160(7): 977. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Intellectual activities (eg reading, paying attention to news etc)	• Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157.
Memory	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Ballard, J., M. Mooney and O. Dempsey (2013). "Prevalence of frailty-related risk factors in older adults seen by community nurses." Journal of Advanced Nursing 69(3): 675-684.

	• Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Forgetfulness	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Need for power of attorney	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Decision making/reasoning	• Naik, Aanand D., et al. "Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct home assessments." The Journal of the American Board of Family Medicine 23.5 (2010): 614-621.
Sub domain: Mental	
Anxiety	• Gobbens, R. J. and M. A. van Assen (2012). "Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire." Arch Gerontol Geriatr 55(2): 369-379. (a) • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
Depression	• Alexander, N., K. Guire, D. Thelen, J. Ashton-Miller, A. Schultz, J. Grunawalt and B. Giordani (2000). "Self-reported walking ability predicts functional mobility performance in frail older adults." Journal - American Geriatrics Society 48(11): 1408-1413. • Bilotta, C., A. Case, P. Nicolini, S. Mauri, M. Castelli and C. Vergani (2010). "Social vulnerability, mental health and correlates of frailty in older outpatients living alone in the community in Italy." Aging & Mental Health 14(8): 1024-1036. • Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Chen, Chin-Ying, et al. "The prevalence of subjective frailty and factors associated with frailty in Taiwan." Archives of gerontology and geriatrics 50 (2010): S43-S47. • Ehrlich, P. L. (2006). "Caring for the frail elderly in the home: a multidisciplinary approach." Home Health Care Management & Practice 19(1): 38-44.

	• Jürschik, P., C. Nunin, T. Botigue, M. A. Escobar, A. Lavedan and M. Viladrosa (2012). "Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey." Archives of Gerontology & Geriatrics 55(3): 625-631. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Mehta, Kala M., Kristine Yaffe, and Kenneth E. Covinsky. "Cognitive impairment, depressive symptoms, and functional decline in older people." Journal of the American Geriatrics Society 50.6 (2002): 1045-1050. • Murphy, S. L., C. S. Williams and T. M. Gill (2002). "Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons." Journal of the American Geriatrics Society 50(3): 516-520. • Ottenbacher, K. J., J. E. Graham, S. Al Snih, M. Raji, R. Samper-Ternent, G. V. Ostir and K. S. Markides (2009). "Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly." American Journal of Public Health 99(4): 673-679. • Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233. • Schnittger, R. I. B., C. D. Walsh, A.-M. Casey, J. P. Wherton, J. E. McHugh and B. A. Lawlor (2012). "Psychological distress as a key component of psychosocial functioning in community-dwelling older people." Aging and Mental Health 16(2): 199-207. • Stuck, A. E., et al. (2000). "A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission." Archives of internal medicine 160(7): 977. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Loneliness	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397.
Exhaustion/energy	• Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010)

	"Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Ehrlich, P. L. (2006). "Caring for the frail elderly in the home: a multidisciplinary approach." Home Health Care Management & Practice 19(1): 38-44. • Fried LP, Tangen CM, Walston J et al. Frailty in older adults: Evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56A:M146–M156. • Schnelle, J. F., M. S. Buchowski, T. A. Ikizler, D. W. Durkin, L. Beuscher and S. F. Simmons (2012). "Evaluation of two fatigability severity measures in elderly adults." Journal of the American Geriatrics Society 60(8): 1527-1533. • Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145. • Vass, M., K. Avlund, V. Siersma and C. Hendriksen (2009) "A feasible model for prevention of functional decline in older home-dwelling people--the GP role. A municipality-randomized intervention trial." Family practice 26, 56-64 DOI: 10.1093/fampra/cmn094.
Fear of falling	• Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Murphy, S. L., C. S. Williams and T. M. Gill (2002). "Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons." Journal of the American Geriatrics Society 50(3): 516-520. • Suzuki, M., N. Ohyama, K. Yamada and M. Kanamori (2002). "The relationship between fear of falling, activities of daily living and quality of life among elderly individuals." Nursing and Health Sciences 4(4): 155-161.
Well-being	• Bleijenberg, N., V. H. ten Dam, I. Drubbel, M. E. Numans, N. J. de Wit and M. J. Schuurmans (2013). "Development of a Proactive Care Program (U-CARE) to Preserve Physical Functioning of Frail Older People in Primary Care." Journal of Nursing Scholarship 45(3): 230-237.
Sleep	• Ensrud, K. E., T. L. Blackwell, S. Redline, S. Ancoli-Israel, M. L. Paudel, P. M. Cawthon, T.-T. L. Dam, E. Barrett-Connor, P. C. Leung, K. L. Stone and G. Osteoporotic Fractures in Men Study (2009). "Sleep disturbances and frailty status in older community-dwelling men." Journal of the American Geriatrics Society 57(11): 2085-2093. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Vaz Fragoso, C. A., E. A. Gahbauer, P. H. Van Ness and T. M. Gill (2009). "Sleep-wake disturbances and frailty in community-living

	older persons." Journal of the American Geriatrics Society 57(11): 2094-2100.
Dissatisfaction with strength and endurance	• Rouge Bugat, M. E., P. Cestac, S. Oustric, B. Vellas and F. Nourhashemi (2012). "Detecting Frailty in Primary Care: A Major Challenge for Primary Care Physicians." Journal of the American Medical Directors Association 13(8): 669-672.
Psychological distress	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Gobbens, R. J. and M. A. van Assen (2012). "Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire." Arch Gerontol Geriatr 55(2): 369-379. (a) • Ottenbacher, K. J., J. E. Graham, S. Al Snih, M. Raji, R. Samper-Ternent, G. V. Ostir and K. S. Markides (2009). "Mexican Americans and frailty: findings from the Hispanic established populations epidemiologic studies of the elderly." American Journal of Public Health 99(4): 673-679. • Schnittger, R. I. B., C. D. Walsh, A.-M. Casey, J. P. Wherton, J. E. McHugh and B. A. Lawlor (2012). "Psychological distress as a key component of psychosocial functioning in community-dwelling older people." Aging and Mental Health 16(2): 199-207.
Domain: Participation	
Sub domain: Functional Abilities	
Continence	• Aguilar-Navarro, S., A. P. Navarrete-Reyes, B. H. Grados-Chavarria, J. M. A. Garcia-Lara, H. Amieva and J. A. Avila-Funes (2012). "The severity of urinary incontinence decreases health-related quality of life among community-dwelling elderly." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 67(11): 1266-1271. • Bleijenberg, N., V. H. ten Dam, I. Drubbel, M. E. Numans, N. J. de Wit and M. J. Schuurmans (2013). "Development of a Proactive Care Program (U-CARE) to Preserve Physical Functioning of Frail Older People in Primary Care." Journal of Nursing Scholarship 45(3): 230-237. • Ehrlich, P. L. (2006). "Caring for the frail elderly in the home: a multidisciplinary approach." Home Health Care Management & Practice 19(1): 38-44. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • St John, P. D., S. L. Tyas and P. R. Montgomery (2013). "Life satisfaction and frailty in community-based older adults: cross-sectional and prospective analyses." International Psychogeriatrics 25(10): 1709-1716.
Bathing	• Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157.
iADLs	• Barr, E. L., C. Browning, S. R. Lord, H. B. Menz and H. Kendig (2005). "Foot and leg problems are important determinants of functional

status in community dwelling older people." Disabil Rehabil 27(16): 917-923.

- Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012b). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28.
- Binder, Ellen F., et al. "Effects of Exercise Training on Frailty in Community-Dwelling Older Adults: Results of a Randomized, Controlled Trial." Journal of the American Geriatrics Society 50.12 (2002): 1921-1928.
- Boyle, P. A., A. S. Buchman and D. A. Bennett (2010). "Purpose in life is associated with a reduced risk of incident disability among community-dwelling older persons." American Journal of Geriatric Psychiatry 18(12): 1093-1102.
- Burton, L. C., J. P. Weiner, G. D. Stevens and J. Kasper (2002). "Health outcomes and Medicaid costs for frail older individuals: a case study of a MCO versus fee-for-service care." Journal of the American Geriatrics Society 50(2): 382-388.
- Carr, D. B., K. Flood, K. Steger-May, K. B. Schechtman and E. F. Binder (2006). "Characteristics of frail older adult drivers." Journal of the American Geriatrics Society 54(7): 1125-1129.
- Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187.
- Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223.
- Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480.
- Dapp U, Anders J, von Renteln-Kruse W, Golgert S, Meier-Baumgartner HP, Minder CE. The longitudinal urban cohort ageing study (LUCAS): study protocol and participation in the first decade. BMC Geriatrics 2012;12:35.
- Davey, A., E. E. Femia, S. H. Zarit, D. G. Shea, G. Sundstrom, S. Berg, M. A. Smyer and J. Savla (2005). "Life on the edge: patterns of formal and informal help to older adults in the United States and Sweden." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 60(5): S281-288.
- Dias, R. C., M. T. F. Freire, E. G. S. Santos, R. A. Vieira, J. M. D. Dias and M. R. Perracini (2011). "Characteristics associated with activity restriction induced by fear of falling in community-dwelling elderly." Revista Brasileira de Fisioterapia 15(5): 406-413.
- Ensrud, K. E., S. K. Ewing, P. M. Cawthon, H. A. Fink, B. C. Taylor, J. A. Cauley, T. T. Dam, L. M. Marshall, E. S. Orwoll and S. R. Cummings (2009). "A comparison of frailty indexes for the prediction of falls, disability, fractures, and mortality in older men." Journal of the American Geriatrics Society 57(3): 492-498.
- Formiga, F., A. Ferrer, E. Duaso, C. Olmedo and R. Pujol (2008). "Falls in nonagenarians living in their own homes: the Nonasantfeliu study." Journal of Nutrition, Health & Aging 12(4): 273-276.

- Garcia-Garcia, F. J., G. Gutierrez Avila, A. Alfaro-Acha, M. S. Amor Andres, M. De Los Angeles De La Torre Lanza, M. V. Escribano Aparicio, S. Humanes Aparicio, J. L. Larrion Zugasti, M. Gomez-Serranillo Reus, F. Rodriguez-Artalejo, L. Rodriguez-Manas and G. Toledo Study (2011). "The prevalence of frailty syndrome in an older population from Spain. The Toledo Study for Healthy Aging." Journal of Nutrition, Health & Aging 15(10): 852-856.
- Gill, T. M., D. I. Baker, M. Gottschalk, P. N. Peduzzi, H. Allore and P. H. Van Ness (2004). "A prehabilitation program for the prevention of functional decline: Effect on higher-level physical function." Archives of Physical Medicine and Rehabilitation 85(7): 1043-1049. [same study as above, but more outcomes concerning physical function/decline noted]
- Gitlin, L. N., L. Winter, M. P. Dennis and W. W. Hauck (2008). "Variation in response to a home intervention to support daily function by age, race, sex, and education." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 63(7): 745-750.
- Gobbens, R. J. J., M. A. L. M. van Assen, K. G. Luijkx and J. M. G. A. Schols (2012). "The Predictive Validity of the Tilburg Frailty Indicator: Disability, Health Care Utilization, and Quality of Life in a Population at Risk." Gerontologist 52(5): 619-631. (b)
- Holroyd-Leduc, J. M., K. M. Mehta and K. E. Covinsky (2004). "Urinary Incontinence and Its Association with Death, Nursing Home Admission, and Functional Decline." Journal of the American Geriatrics Society 52(5): 712-718.
- Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8.
- Landi, F., A. Russo, M. Cesari, M. Pahor, R. Bernabei and G. Onder (2007). "HDL-cholesterol and physical performance: Results from the ageing and longevity study in the sirente geographic area (ilSIRENTE Study)." Age and Ageing 36(5): 514-520.
- Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.
- Li, I. C., Y.-C. Chen and H.-T. Kuo (2005). "The health status and health promotion behavior of low-income elderly in the Taipei area." Journal of Nursing Research 13(4): 305-312.
- Macklai, N. S., et al. (2013). "Prospective association of the SHARE-operationalized frailty phenotype with adverse health outcomes: evidence from 60+ community-dwelling Europeans living in 11 countries." BMC Geriatrics 13(1): 3.
- Melis, R. J., M. I. van Eijken, S. Teerenstra, T. van Achterberg, S. G. Parker, G. F. Borm, E. H. van de Lisdonk, M. Wensing and M. G. Rikkert (2008). "A randomized study of a multidisciplinary program to intervene on geriatric syndromes in vulnerable older people who live at home (Dutch EASYcare Study)." J Gerontol A Biol Sci Med Sci 63(3): 283-290.
- Murphy, S. L., C. S. Williams and T. M. Gill (2002). "Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons." Journal of the American Geriatrics Society 50(3): 516-520.

	• Naik, Aanand D., et al. "Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct home assessments." The Journal of the American Board of Family Medicine 23.5 (2010): 614-621. • Ottenbacher, K. J., G. V. Ostir, M. K. Peek, S. A. Snih, M. A. Raji and K. S. Markides (2005). "Frailty in older Mexican Americans." Journal of the American Geriatrics Society 53(9): 1524-1531. • Quinn, T. J., K. McArthur, G. Ellis and D. J. Stott (2011). "Functional assessment in older people." Bmj 343(7821). • Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233. • Saliba, D., M. Elliott, L. Z. Rubenstein, D. H. Solomon, R. T. Young, C. J. Kamberg, C. Roth, C. H. MacLean, P. G. Shekelle, E. M. Sloss and N. S. Wenger (2001). "The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community." Journal of the American Geriatrics Society 49(12): 1691-1699. • Schnittger, R. I. B., C. D. Walsh, A.-M. Casey, J. P. Wherton, J. E. McHugh and B. A. Lawlor (2012). "Psychological distress as a key component of psychosocial functioning in community-dwelling older people." Aging and Mental Health 16(2): 199-207. • Seidel, D., C. Brayne and C. Jagger (2011). "Limitations in physical functioning among older people as a predictor of subsequent disability in instrumental activities of daily living." Age and Ageing 40(4): 463-469. • Sousa, A. C., R. C. Dias, A. C. Maciel and R. O. Guerra (2012). "Frailty syndrome and associated factors in community-dwelling elderly in Northeast Brazil." Arch Gerontol Geriatr 54(2): e95-e101. • Stookey, J. D., J. L. Purser, C. F. Pieper and H. J. Cohen (2004). "Plasma hypertonicity: another marker of frailty?" Journal of the American Geriatrics Society 52(8): 1313-1320. • Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720. • Weaver, G. D., Y. F. Kuo, M. A. Raji, S. Al Snih, L. Ray, E. Torres and K. J. Ottenbacher (2009). "Pain and disability in older Mexican-American adults." Journal of the American Geriatrics Society 57(6): 992-999.
ADLs	• Ament, B. H. L., M. E. De Vugt, F. M. K. Koomen, M. W. J. Jansen, F. R. J. Verhey and G. I. J. M. Kempen (2012). "Resources as a protective factor for negative outcomes of frailty in elderly people." Gerontology 58(5): 391-397. • Armi, F., E. Guilley and C. J. L. d'Epinay (2008). "Health: Support provided and received in advanced old age. A five-year follow-up." Zeitschrift für Gerontologie und Geriatrie 41(1): 56-62.

- Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655.
- Ballard, J., M. Mooney and O. Dempsey (2013). "Prevalence of frailty-related risk factors in older adults seen by community nurses." Journal of Advanced Nursing 69(3): 675-684.
- Bilotta, C., A. Case, P. Nicolini, S. Mauri, M. Castelli and C. Vergani (2010). "Social vulnerability, mental health and correlates of frailty in older outpatients living alone in the community in Italy." Aging & Mental Health 14(8): 1024-1036.
- Bilotta, C., P. Nicolini, A. Case, G. Pina, S. Rossi and C. Vergani (2012b). "Frailty syndrome diagnosed according to the Study of Osteoporotic Fractures (SOF) criteria and adverse health outcomes among community-dwelling older outpatients in Italy. A one-year prospective cohort study." Archives of Gerontology & Geriatrics 54(2): e23-28.
- Binder, Ellen F., et al. "Effects of Exercise Training on Frailty in Community-Dwelling Older Adults: Results of a Randomized, Controlled Trial." Journal of the American Geriatrics Society 50.12 (2002): 1921-1928.
- Boyle, P. A., A. S. Buchman and D. A. Bennett (2010). "Purpose in life is associated with a reduced risk of incident disability among community-dwelling older persons." American Journal of Geriatric Psychiatry 18(12): 1093-1102.
- Burton, L. C., J. P. Weiner, G. D. Stevens and J. Kasper (2002). "Health outcomes and Medicaid costs for frail older individuals: a case study of a MCO versus fee-for-service care." Journal of the American Geriatrics Society 50(2): 382-388.
- Carr, D. B., K. Flood, K. Steger-May, K. B. Schechtman and E. F. Binder (2006). "Characteristics of frail older adult drivers." Journal of the American Geriatrics Society 54(7): 1125-1129.
- Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480.
- Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157.
- Dapp U, Anders J, von Renteln-Kruse W, Golgert S, Meier-Baumgartner HP, Minder CE. The longitudinal urban cohort ageing study (LUCAS): study protocol and participation in the first decade. BMC Geriatrics 2012;12:35.
- Davey, A., E. E. Femia, S. H. Zarit, D. G. Shea, G. Sundstrom, S. Berg, M. A. Smyer and J. Savla (2005). "Life on the edge: patterns of formal and informal help to older adults in the United States and Sweden." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 60(5): S281-288.
- de Gonzalo-Calvo, D., B. Fernandez-Garcia, B. de Luxan-Delgado, S. Rodriguez-Gonzalez, M. Garcia-Macia, F. M. Suarez, J. J. Solano, M. J. Rodriguez-Colunga and A. Coto-Montes (2012). "Long-term training induces a healthy inflammatory and endocrine emergent biomarker profile in elderly men." Age 34(3): 761-771.

- den Ouden, M. E. M., M. J. Schuurmans, S. Mueller-Schotte and Y. T. van der Schouw (2013). "Identification of high-risk individuals for the development of disability in activities of daily living. A ten-year follow-up study." Experimental Gerontology 48(4): 437-443.
- Dias, R. C., M. T. F. Freire, E. G. S. Santos, R. A. Vieira, J. M. D. Dias and M. R. Perracini (2011). "Characteristics associated with activity restriction induced by fear of falling in community-dwelling elderly." Revista Brasileira de Fisioterapia 15(5): 406-413.
- Formiga, F., A. Ferrer, E. Duaso, C. Olmedo and R. Pujol (2008). "Falls in nonagenarians living in their own homes: the Nonasantfeliu study." Journal of Nutrition, Health & Aging 12(4): 273-276.
- Garcia-Garcia, F. J., G. Gutierrez Avila, A. Alfaro-Acha, M. S. Amor Andres, M. De Los Angeles De La Torre Lanza, M. V. Escribano Aparicio, S. Humanes Aparicio, J. L. Larrion Zugasti, M. Gomez-Serranillo Reus, F. Rodriguez-Artalejo, L. Rodriguez-Manas and G. Toledo Study (2011). "The prevalence of frailty syndrome in an older population from Spain. The Toledo Study for Healthy Aging." Journal of Nutrition, Health & Aging 15(10): 852-856.
- Gill, T. M., D. I. Baker, M. Gottschalk, P. N. Peduzzi, H. Allore and A. Byers (2002). "A program to prevent functional decline in physically frail, elderly persons who live at home." New England Journal of Medicine 347(14): 1068-1074.
- Gill, T. M., H. Allore, T. R. Holford and Z. Guo (2004). "The development of insidious disability in activities of daily living among community-living older persons." American Journal of Medicine 117(7): 484-491.
- Giné-Garriga, Maria, et al. "The effect of functional circuit training on physical frailty in frail older adults: a randomized controlled trial." Journal of aging and physical activity 18.4 (2010): 401.
- Gitlin, L. N., L. Winter, M. P. Dennis and W. W. Hauck (2008). "Variation in response to a home intervention to support daily function by age, race, sex, and education." Journals of Gerontology Series A-Biological Sciences & Medical Sciences 63(7): 745-750.
- Gobbens, R. J. J., M. A. L. M. van Assen, K. G. Luijkx and J. M. G. A. Schols (2012). "The Predictive Validity of the Tilburg Frailty Indicator: Disability, Health Care Utilization, and Quality of Life in a Population at Risk." Gerontologist 52(5): 619-631. (b)
- Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431.
- Holroyd-Leduc, J. M., K. M. Mehta and K. E. Covinsky (2004). "Urinary Incontinence and Its Association with Death, Nursing Home Admission, and Functional Decline." Journal of the American Geriatrics Society 52(5): 712-718.
- Karnik, K. and D. J. Mazzatti (2009). "Review of tools and technologies to assess multi-system functional impairment and frailty." Clinical Medicine: Geriatrics 2009(3): 1-8.
- Landi, F., A. Russo, M. Cesari, M. Pahor, R. Bernabei and G. Onder (2007). "HDL-cholesterol and physical performance: Results from the ageing and longevity study in the sirente geographic area (ilSIRENTE Study)." Age and Ageing 36(5): 514-520.
- Landi, F., A. Russo, R. Liperoti, P. Danese, E. Maiorana, M. Pahor, R. Bernabei and G. Onder (2009). "Daily Pain and Functional Decline Among Old-Old Adults Living in the Community: Results from the

ilSIRENTE Study." Journal of Pain and Symptom Management 38(3): 350-357.

- Lang, P. O., J. P. Michel and D. Zekry (2009). "Frailty syndrome: a transitional state in a dynamic process." Gerontology 55(5): 539-549.
- Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42.
- Li, I. C., Y.-C. Chen and H.-T. Kuo (2005). "The health status and health promotion behavior of low-income elderly in the Taipei area." Journal of Nursing Research 13(4): 305-312.
- Luukinen H, Lehtola S, Jokelainen J, Väänänen-Sainio R, Lotvonen S, Koistinen P. Prevention of disability by exercise among the elderly: a population-based, randomized, controlled trial. Scand J Prim Health Care 2006; 24: 199–205.
- Macklai, N. S., et al. (2013). "Prospective association of the SHARE-operationalized frailty phenotype with adverse health outcomes: evidence from 60+ community-dwelling Europeans living in 11 countries." BMC Geriatrics 13(1): 3.
- Matheï, C. B. P. J. (2011). "Associations Between Cytomegalovirus Infection and Functional Impairment and Frailty in the BELFRAIL Cohort." Journal of the American Geriatrics Society 59(12): 2201-2208.
- Mehta, Kala M., Kristine Yaffe, and Kenneth E. Covinsky. "Cognitive impairment, depressive symptoms, and functional decline in older people." Journal of the American Geriatrics Society 50.6 (2002): 1045-1050.
- Murphy, S. L., C. S. Williams and T. M. Gill (2002). "Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons." Journal of the American Geriatrics Society 50(3): 516-520.
- Naik, Aanand D., et al. "Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct home assessments." The Journal of the American Board of Family Medicine 23.5 (2010): 614-621.
- Oida, Y., Y. Kitabatake, Y. Nishijima, T. Nagamatsu, H. Kohno, K. Egawa and T. Arao (2003). "Effects of a 5-year exercise-centered health-promoting programme on mortality and ADL impairment in the elderly." Age & Ageing 32(6): 585-592.
- Ottenbacher, K. J., G. V. Ostir, M. K. Peek, S. A. Snih, M. A. Raji and K. S. Markides (2005). "Frailty in older Mexican Americans." Journal of the American Geriatrics Society 53(9): 1524-1531.
- Paw CA, N. de Jong, E. G. Schouten, G. J. Hiddink and F. J. Kok (2001). "Physical exercise and/or enriched foods for functional improvement in frail, independently living elderly: a randomized controlled trial." Archives of Physical Medicine & Rehabilitation 82(6): 811-817.
- Peduzzi, P., Z. Guo, R. A. Marottoli, T. M. Gill, K. Araujo and H. G. Allore (2007). "Improved self-confidence was a mechanism of action in two geriatric trials evaluating physical interventions." Journal of Clinical Epidemiology 60(1): 94-102.
- Penninx, Brenda WJH, et al. "Anemia is associated with disability and decreased physical performance and muscle strength in the elderly." Journal of the American Geriatrics Society 52.5 (2004): 719-724.

- Quinn, T. J., K. McArthur, G. Ellis and D. J. Stott (2011). "Functional assessment in older people." Bmj 343(7821).
- Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
- Rochat, S., R. G. Cumming, F. Blyth, H. Creasey, D. Handelsman, D. G. Le Couteur, V. Naganathan, P. N. Sambrook, M. J. Seibel and L. Waite (2010). "Frailty and use of health and community services by community-dwelling older men: the Concord Health and Ageing in Men Project." Age & Ageing 39(2): 228-233.
- Rothman, M. D., L. Leo-Summers and T. M. Gill (2008). "Prognostic Significance of Potential Frailty Criteria." Journal of the American Geriatrics Society 56(12): 2211-2216.
- Saliba, D., M. Elliott, L. Z. Rubenstein, D. H. Solomon, R. T. Young, C. J. Kamberg, C. Roth, C. H. MacLean, P. G. Shekelle, E. M. Sloss and N. S. Wenger (2001). "The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community." Journal of the American Geriatrics Society 49(12): 1691-1699.
- Schnittger, R. I. B., C. D. Walsh, A.-M. Casey, J. P. Wherton, J. E. McHugh and B. A. Lawlor (2012). "Psychological distress as a key component of psychosocial functioning in community-dwelling older people." Aging and Mental Health 16(2): 199-207.
- Sousa, A. C., R. C. Dias, A. C. Maciel and R. O. Guerra (2012). "Frailty syndrome and associated factors in community-dwelling elderly in Northeast Brazil." Arch Gerontol Geriatr 54(2): e95-e101.
- Stookey, J. D., J. L. Purser, C. F. Pieper and H. J. Cohen (2004). "Plasma hypertonicity: another marker of frailty?" Journal of the American Geriatrics Society 52(8): 1313-1320.
- Stuck, A. E., et al. (2000). "A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission." Archives of internal medicine 160(7): 977.
- Subra, J., S. Gillette-Guyonnet, M. Cesari, S. Oustric, B. Vellas and T. Platform (2012). "The integration of frailty into clinical practice: preliminary results from the Gerontopole." Journal of Nutrition, Health & Aging 16(8): 714-720.
- Suzuki, M., N. Ohyama, K. Yamada and M. Kanamori (2002). "The relationship between fear of falling, activities of daily living and quality of life among elderly individuals." Nursing and Health Sciences 4(4): 155-161.
- Vass, M., K. Avlund, V. Siersma and C. Hendriksen (2009) "A feasible model for prevention of functional decline in older home-dwelling people--the GP role. A municipality-randomized intervention trial." Family practice 26, 56-64 DOI: 10.1093/fampra/cmn094.
- Vass, Mikkel, et al. "Preventive home visits to older home-dwelling people and different functional decline patterns." European Journal of Ageing 4.3 (2007): 107-113.
- Villareal, Dennis T., et al. "Weight loss, exercise, or both and physical function in obese older adults." New England Journal of Medicine 364.13 (2011): 1218-1229.
- Weaver, G. D., Y. F. Kuo, M. A. Raji, S. Al Snih, L. Ray, E. Torres and K. J. Ottenbacher (2009). "Pain and disability in older Mexican-American adults." Journal of the American Geriatrics Society 57(6): 992-999.

AADLs	• Bennett, A. K. (2004). "Older age underwriting: frisky vs frail." Journal of Insurance Medicine (Seattle) 36(1): 74-83. • Dias, R. C., M. T. F. Freire, E. G. S. Santos, R. A. Vieira, J. M. D. Dias and M. R. Perracini (2011). "Characteristics associated with activity restriction induced by fear of falling in community-dwelling elderly." Revista Brasileira de Fisioterapia 15(5): 406-413.
Multidimensional functional ability	• Corapi, K. M., H. M. McGee and M. Barker (2006). "Screening for frailty among seniors in clinical practice." Nature Clinical Practice Rheumatology 2(9): 476-480. • Dapp U, Anders J, von Renteln-Kruse W, Golgert S, Meier-Baumgartner HP, Minder CE. The longitudinal urban cohort ageing study (LUCAS): study protocol and participation in the first decade. BMC Geriatrics 2012;12:35. • Fukutomi, E., K. Okumiya, T. Wada, R. Sakamoto, Y. Ishimoto, Y. Kimura, Y. Kasahara, W.-L. Chen, H. Imai, M. Fujisawa, K. Otuka and K. Matsubayashi (2013). "Importance of cognitive assessment as part of the “Kihon Checklist” developed by the Japanese Ministry of Health, Labor and Welfare for prediction of frailty at a 2-year follow up." Geriatrics & Gerontology International 13(3): 654-662. • Hébert, R., et al. (2001). "Efficacy of a nurse-led multidimensional preventive programme for older people at risk of functional decline. A randomized controlled trial." Age and ageing 30(2): 147-153. • Hebert, R., M. Raiche, M.-F. Dubois, N. D. R. Gueye, N. Dubuc, M. Tousignant and P. Group (2010). "Impact of PRISMA, a coordination-type integrated service delivery system for frail older people in Quebec (Canada): A quasi-experimental study." Journals of Gerontology Series B-Psychological Sciences & Social Sciences 65B(1): 107-118. • Matheï, C. B. P. J. (2011). "Associations Between Cytomegalovirus Infection and Functional Impairment and Frailty in the BELFRAIL Cohort." Journal of the American Geriatrics Society 59(12): 2201-2208. • Quinn, T. J., K. McArthur, G. Ellis and D. J. Stott (2011). "Functional assessment in older people." Bmj 343(7821). • Saliba, D., M. Elliott, L. Z. Rubenstein, D. H. Solomon, R. T. Young, C. J. Kamberg, C. Roth, C. H. MacLean, P. G. Shekelle, E. M. Sloss and N. S. Wenger (2001). "The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community." Journal of the American Geriatrics Society 49(12): 1691-1699. • St John, P. D., S. L. Tyas and P. R. Montgomery (2013). "Life satisfaction and frailty in community-based older adults: cross-sectional and prospective analyses." International Psychogeriatrics 25(10): 1709-1716. • Thomas, R., G. Worrall, F. Elgar and J. Knight (2007). "Can they keep going on their own? A four-year randomized trial of functional assessments of community residents." Canadian Journal on Aging 26(4): 379-390. • Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145.
Help with personal finance	• Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily

	living dependence in community-dwelling elders." Medical Care 44(2): 149-157.
Deteriorating personal hygiene	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Negotiating obstacles	• Ho, L. S., H. G. Williams and E. A. W. Hardwick (2002). "Discriminating characteristics of community-dwelling elderly at high and low risk for frailty." Journal of Aging and Physical Activity 10(4): 413-431.
Ability to climb stairs	• Au, A., M. T. E. Puts, J. D. Fletcher, N. Sourial and H. Bergman (2011). "Frailty Markers Predicting Emergency Department Visits in a Community-Dwelling Sample of Vulnerable Seniors in Montreal." Canadian Journal on Aging 30(4): 647-655. • Barr, E. L., C. Browning, S. R. Lord, H. B. Menz and H. Kendig (2005). "Foot and leg problems are important determinants of functional status in community dwelling older people." Disabil Rehabil 27(16): 917-923. • Bonnefoy, M., F. Boutitie, C. Mercier, F. Gueyffier, C. Carre, G. Guetemme, B. Ravis, M. Laville and C. Cornu (2012). "Efficacy of a home-based intervention programme on the physical activity level and functional ability of older people using domestic services: a randomised study." Journal of Nutrition, Health & Aging 16(4): 370-377. • Gill, T. M., H. G. Allore, S. E. Hardy and Z. Guo (2006). "The dynamic nature of mobility disability in older persons." Journal of the American Geriatrics Society 54(2): 248-254.
Activity avoidance	• Delbaere, K., G. Crombez, G. Vanderstraeten, T. Willems and D. Cambier (2004). "Fear-related avoidance of activities, falls and physical frailty. A prospective community-based cohort study." Age Ageing 33(4): 368-373. • Murphy, S. L., C. S. Williams and T. M. Gill (2002). "Characteristics Associated with Fear of Falling and Activity Restriction in Community-Living Older Persons." Journal of the American Geriatrics Society 50(3): 516-520.
Sub domain: Motivation/Volition	
Health-related quality of life	• Bilotta, C., A. Bowling, A. Case, P. Nicolini, S. Mauri, M. Castelli and C. Vergani (2010). "Dimensions and correlates of quality of life according to frailty status: a cross-sectional study on community-dwelling older adults referred to an outpatient geriatric service in Italy." Health & Quality of Life Outcomes 8: 56. • Chang, Y.-W., W.-L. Chen, F.-G. Lin, W.-H. Fang, M.-Y. Yen, C.-C. Hsieh and T.-W. Kao (2012). "Frailty and its impact on health-related quality of life: a cross-sectional study on elder community-dwelling preventive health service users." PLoS ONE [Electronic Resource] 7(5): e38079. • Jürschik, P., C. Nunin, T. Botigue, M. A. Escobar, A. Lavedan and M. Viladrosa (2012). "Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey." Archives of Gerontology & Geriatrics 55(3): 625-631. • Suzuki, M., N. Ohyama, K. Yamada and M. Kanamori (2002). "The relationship between fear of falling, activities of daily living and quality of life among elderly individuals." Nursing and Health Sciences 4(4): 155-161.

	• van Hout, H. P., A. P. Jansen, H. W. van Marwijk, M. Pronk, D. F. Frijters and G. Nijpels (2010). "Prevention of adverse health trajectories in a vulnerable elderly population through nurse home visits: a randomized controlled trial [ISRCTN05358495]." J Gerontol A Biol Sci Med Sci 65(7): 734-742.
Social involvement/engagement/vulnerability	• Andrew, M. K., A. Mitnitski, S. A. Kirkland and K. Rockwood (2012). "The impact of social vulnerability on the survival of the fittest older adults." Age & Ageing 41(2): 161-165. • Gale, C. R., H. E. Syddall, H. Bergman, E. J. Brunner, C. Cooper and A. A. Sayer (2012). "Close Relationships and Risk of Frailty: The Hertfordshire Cohort Study." Journal of the American Geriatrics Society 60(2): 390-392. • Jürschik, P., C. Nunin, T. Botigue, M. A. Escobar, A. Lavedan and M. Viladrosa (2012). "Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey." Archives of Gerontology & Geriatrics 55(3): 625-631. • Li, Chia-Ming, et al. "The effectiveness of a comprehensive geriatric assessment intervention program for frailty in community-dwelling older people: a randomized, controlled trial." Archives of gerontology and geriatrics 50 (2010): S39-S42. • Li, I. C., Y.-C. Chen and H.-T. Kuo (2005). "The health status and health promotion behavior of low-income elderly in the Taipei area." Journal of Nursing Research 13(4): 305-312.
Purpose in life	• Boyle, P. A., A. S. Buchman and D. A. Bennett (2010a). "Purpose in life is associated with a reduced risk of incident disability among community-dwelling older persons." American Journal of Geriatric Psychiatry 18(12): 1093-1102.
Seclusion	• Yamada, M., H. Arai, T. Sonoda and T. Aoyama (2012). "Community-based exercise program is cost-effective by preventing care and disability in Japanese frail older adults." Journal of the American Medical Directors Association 13(6): 507-511.
Self-perception of health	• Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Li, I. C., Y.-C. Chen and H.-T. Kuo (2005). "The health status and health promotion behavior of low-income elderly in the Taipei area." Journal of Nursing Research 13(4): 305-312. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166. • Shinkai, S., et al. (2003). "Predictors for the onset of functional decline among initially non-disabled older people living in a community during a 6-year follow-up." Geriatrics & Gerontology International 3: S31-S39. • Sousa, A. C., R. C. Dias, A. C. Maciel and R. O. Guerra (2012). "Frailty syndrome and associated factors in community-dwelling elderly in Northeast Brazil." Arch Gerontol Geriatr 54(2): e95-e101.
Sub domain: Environment	
Transportation means	• Naik, Aanand D., et al. "Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct

	home assessments." The Journal of the American Board of Family Medicine 23.5 (2010): 614-621.
Losses	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Environment safety	• Naik, Aanand D., et al. "Assessing safe and independent living in vulnerable older adults: perspectives of professionals who conduct home assessments." The Journal of the American Board of Family Medicine 23.5 (2010): 614-621.
Living space	• Xue, Qian-Li, et al. "Life-Space Constriction, Development of Frailty, and the Competing Risk of Mortality The Women's Health and Aging Study I." American journal of epidemiology 167.2 (2008): 240-248.
Domain: Anthropometry	
Weight loss	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Dahlin-Ivanoff, S., G. Gosman-Hedström, A. K. Edberg, K. Wilhelmson, K. Eklund, A. Duner, L. Ziden, A. K. Welmer and S. Landahl (2010) "Elderly persons in the risk zone. Design of a multidimensional, health-promoting, randomised three-armed controlled trial for "prefrail" people of 80+ years living at home." BMC geriatrics 10, 27 DOI: 10.1186/1471-2318-10-27. • Fried LP, Tangen CM, Walston J et al. Frailty in older adults: Evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56A:M146–M156. • Rothman, M. D., L. Leo-Summers and T. M. Gill (2008). "Prognostic Significance of Potential Frailty Criteria." Journal of the American Geriatrics Society 56(12): 2211-2216. • Upatising, Benjavan, et al. "Effects of home telemonitoring on transitions between frailty states and death for older adults: a randomized controlled trial." International journal of general medicine 6 (2013): 145.
Weight gain	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223.
BMI	• Apovian, C. M., C. M. Frey, G. C. Wood, J. Z. Rogers, C. D. Still and G. L. Jensen (2002). "Body mass index and physical function in older women." Obesity Research 10(8): 740-747. • Carrière, Isabelle, et al. "Hierarchical components of physical frailty predicted incidence of dependency in a cohort of elderly women." Journal of clinical epidemiology 58.11 (2005): 1180-1187. • Covinsky, K. E., J. Hilton, K. Lindquist and R. A. Dudley (2006). "Development and validation of an index to predict activity of daily living dependence in community-dwelling elders." Medical Care 44(2): 149-157. • Giné-Garriga, Maria, et al. "The effect of functional circuit training on physical frailty in frail older adults: a randomized controlled trial." Journal of aging and physical activity 18.4 (2010): 401. • Gobbens, R. J. and M. A. van Assen (2012). "Frailty and its prediction of disability and health care utilization: the added value of interviews and physical measures following a self-report questionnaire." Arch Gerontol Geriatr 55(2): 369-379. (a)

	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Ottenbacher, K. J., G. V. Ostir, M. K. Peek, S. A. Snih, M. A. Raji and K. S. Markides (2005). "Frailty in older Mexican Americans." Journal of the American Geriatrics Society 53(9): 1524-1531. • Woods NF, LaCroix AZ, Gray SL, Aragaki A, Cochrane BB, Brunner RL, Masaki K, Murray A, Newman AB: 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):1321–1330.
Fat mass	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Fat free mass	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Skeletal muscle mass	• Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Height	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Loss of height since age 25	• Cawthon, P. M., et al. (2007). "Frailty in older men: prevalence, progression, and relationship with mortality." Journal of the American Geriatrics Society 55(8): 1216-1223.
Sarcopenia	• Cruz-Jentoft, A. J., F. Landi, E. Topinkova and J. P. Michel (2010). "Understanding sarcopenia as a geriatric syndrome." Current Opinion in Clinical Nutrition and Metabolic Care 13(1): 1-7.
Calf circumference	• Doba, N., Y. Tokuda, N. E. Goldstein, T. Kushiro and S. Hinohara (2012). "A pilot trial to predict frailty syndrome: The Japanese Health Research Volunteer Study." Experimental Gerontology 47(8): 638-643. • Ravaglia, Giovanni, et al. "Development of an easy prognostic score for frailty outcomes in the aged." Age and ageing 37.2 (2008): 161-166.
Domain: Service use	
Extent of service use	• Castrejon-Perez, R. C., S. A. Borges-Yanez, L. M. Gutierrez-Robledo and J. A. Avila-Funes (2012). "Oral health conditions and frailty in Mexican community-dwelling elderly: a cross sectional analysis." BMC Public Health 12: 773. • McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and

	health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558.
Intensity of service use	• McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15.
Contact with GP	• McGee, H. M., A. O'Hanlon, M. Barker, A. Hickey, A. Montgomery, R. Conroy and D. O'Neill (2008). "Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use." Journal of the American Geriatrics Society 56(1): 8-15. • Murayama, H., M. Nishi, Y. Shimizu, M.-J. Kim, H. Yoshida, H. Amano, Y. Fujiwara and S. Shinkai (2012). "The Hatoyama Cohort Study: design and profile of participants at baseline." Journal of Epidemiology 22(6): 551-558. • Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Pattern of missed appointments	• Rassen, A. G. (2003). "Seniors-at-home: a case management program for frail elders." Journal of Clinical Outcomes Management 10(11): 603-607.
Receiving preventive home visits	• Vass, Mikkel, et al. "Preventive home visits to older home-dwelling people and different functional decline patterns." European Journal of Ageing 4.3 (2007): 107-113.

Appendix 4.

COMPARISON OF COMPREHENSIVE GERIATRIC ASSESSMENT AND 75+ ASSESSMENT TOOL

	Comprehensive Geriatric Assessment (CGA)	75+ Assessment Tool
Description	• Comprehensive geriatric assessment (CGA) is defined as a multidisciplinary diagnostic and treatment process that identifies medical, psychosocial, and functional limitations of a frail older person in order to develop a coordinated plan to maximize overall health with aging • It requires evaluation of multiple issues including physical, cognitive, affective, social, financial, environmental, and spiritual components that influence an older adult's health. • CGA is based on the premise that a systematic evaluation of frail, older persons by a team of health professionals may identify a variety of treatable health problems and lead to better health outcomes. • It focuses on elderly individuals with complex problems, • It emphasizes functional status and quality of life • It frequently takes advantage of an interdisciplinary team of providers	A health assessment of an older person is an in-depth assessment of a patient aged 75 years and over. It provides a structured way of identifying health issues and conditions that are potentially preventable or amenable to interventions in order to improve health and/or quality of life.
Indications for referrals	The best evidence for comprehensive geriatric assessment (CGA) is based on identifying appropriate patients (ie, excluding patients who are either too well or are too sick to derive benefit). No criteria have been validated to readily identify patients who are likely to benefit from CGA. Specific criteria used by CGA programs to identify patients include: • Age • Medical comorbidities such as heart failure or cancer • Psychosocial disorders such as depression or isolation • Specific geriatric conditions such as dementia, falls, or functional disability • Previous or predicted high health care utilization • Consideration of change in living	It is indicated for patients 75 and over. For aboriginal and Torres Strait Islander – patients 55 years old and above.

	situation (eg, from independent living to assisted living, nursing home, or in-home caregivers) One outpatient approach would be to refer patients for CGA who are found to have problems in multiple areas during geriatric assessment screens. Major illnesses (eg, those requiring hospitalization or increased home resources to manage medical and functional needs) should also prompt referral for CGA, particularly for functional status, fall risk, cognitive problems, and mood disorders. An inpatient approach would be to refer older patients admitted for a specific medical or surgical reason (eg, fractures, failure to thrive, recurrent pneumonia, pressure sores). Another approach would be to have all patients above a certain age (eg, 85 years) receive preliminary screening to determine whether a full multidisciplinary evaluation is needed	
Assessment Team	In many settings, the CGA process relies on a core team consisting of a physician, nurse, and social worker and, when appropriate, draws upon an extended team of physical and occupational therapists, nutritionists, pharmacists, psychiatrists, psychologists, dentists, audiologists, podiatrists, and opticians.	The assessment is to be conducted by the patient's usual GP.
Conducting the Assessment		
Framework	The overall care rendered by CGA teams can be divided into six steps: • Data gathering • Discussion among the team • Development of a treatment plan • Implementation of the treatment plan • Monitoring response to the treatment plan • Revising the treatment plan	The health assessment must include: • Information collection, including taking a patient history and undertaking or arranging examinations and investigations as required; • Making an overall assessment of the patient; • Recommending appropriate interventions; • Providing advice and information to the patient; • Keeping a record of the health assessment, and offering the patient

		a written report about the health assessment, with recommendations about matters covered by the health assessment; and • Offering the patient's carer (if any, and if the medical practitioner considers it appropriate and the patient agrees) a copy of the report or extracts of the report relevant to the carer
Assessment Tools	A pre-visit questionnaire sent to the patient or caregiver prior to the initial assessment can be a timesaving method to gather a large amount of information These questionnaires can be used to gather information about general history (eg, past medical history, medications, social history, review of systems), as well as gather information specific to CGA, such as: • Ability to perform functional tasks and need for assistance • Fall history • Sources of social support, particularly family or friends • Depressive symptoms • Vision or hearing difficulties • Whether the patient has specified a durable power of attorney	Questionnaire used to gather information such as: • past history • allergies • smoking • alcohol • social history • family history • hearing • vision • medications • immunization • investigations
Major components	Core components of comprehensive geriatric assessment (CGA) that should be evaluated during the assessment process are as follows: • Functional capacity • Fall risk • Cognition • Mood • Polypharmacy • Social support • Financial concerns • Goals of care • Advanced care preferences Additional components may also include evaluation of the following: • Nutrition/weight change • Urinary continence	Health Examination • height measurements • weight measurements • blood pressure measurements • medical support • social support Personal/well being assessment Home safety assessment Personal mobility assessment Personal nutrition assessment Psychological assessment Fitness for driving

	• Sexual function • Vision/hearing • Dentition • Living situation • Spirituality	