Diagnosing, Preventing and Treating Frailty

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Learning Objectives

- Describe the impact frailty can have on the well-being of the older adult, and how frailty can be prevented
- Describe what happens to patients as they get older and how it is related to frailty
- Provide advice on how to prevent frailty, reverse it, or slow down its progression, with a particular focus on diet and physical activity.

Case presentation

- 68 yo female with a history of severe COPD on home O2 intermittently,
- Head and neck cancer s/p resection + XRT in 2018, currently in remission
- Has osteoporosis, on bisphosphonates since 2104, depression
- Complaints of 11% weight loss over the last year, dysphagia, fatigue, SOB, poor appetite and
- Lives with partner in rural area, sedentary, smokes ~5 cig/day

Case presentation

- On Ca+D 500mg/400 IU daily, Bupropion, Zoledronic acid yearly, albuterol, tiotropium, nometasone
- Vitals: 135/75, 102, 22, O_2 sat 88% on room air, BMI 16
- Dry oral mucosae, actinic dermatitis over the neck, well healed scar
- Tachycardic, decreased breath sounds B, no wheezing
- No edema
- Unable to stand from chair without using her arms
- Walking speed: 12 seconds to walk 15ft

Case presentation

- Is she frail?
  - How can we diagnose frailty in her case?
- What preventive measures or treatments, if any, should we consider?

Paradigms of Frailty

- Increased vulnerability to stressors and adverse outcomes seen often late in life
  - Frailty as accumulation of deficits: "the more things that are wrong, the more likely that person is frail" (Rockwood 2007)
  - Frailty as a biologic syndrome of decreased reserve resulting from cumulative declines across multiple physiologic systems (Fried et al. 2001)

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

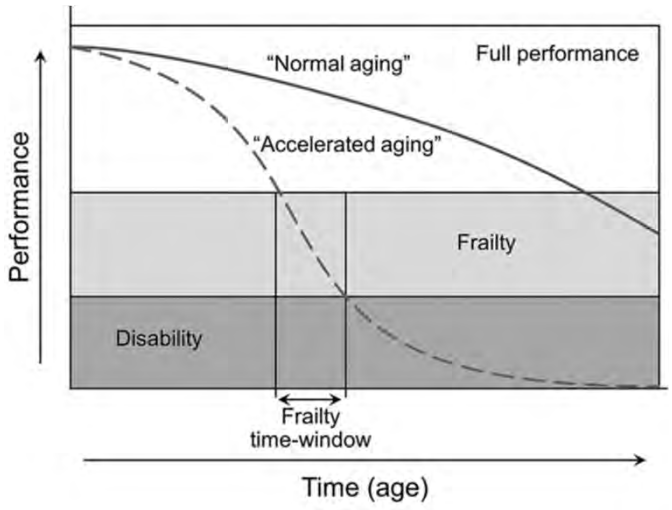
Risk Factors for Frailty

- Older age
- Lower educational level
- Current smoker
- Current use of postmenopausal hormone therapy
- African-American or Hispanic ethnicity
- Not married
- Depression, or use of antidepressants
- Intellectual disability

Diseases associated with increased risk of frailty

- COPD
- Chronic inflammatory diseases
- Hip fractures
- Pressure ulcers and chronic wounds
- AIDS, Tuberculosis, other chronic infections
- Congestive Heart Failure
- ESRD
- Diabetes
- Dementia
- Depression
- Advanced cancer

Frailty Trajectory



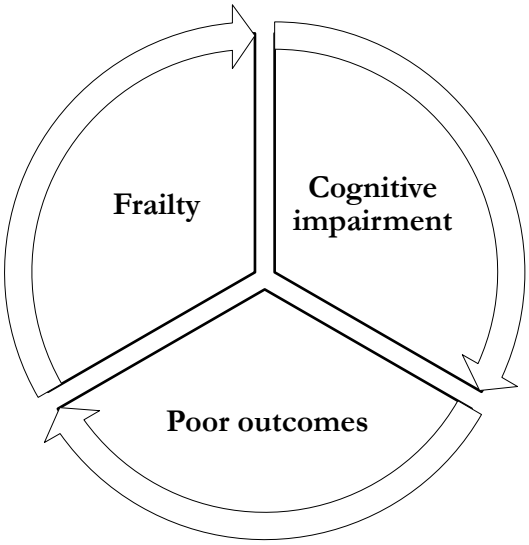
Ferrucci L et al. Biomarkers of frailty in older persons. J Endocrinol Invest 2002;25(10 Suppl):10-15

Social Factors and Frailty

Andrew MK (2010) *Social vulnerability in old age*. Brocklehurst's Textbook of Geriatrics and Clinical Gerontology

Frailty and MCI

- Cognition is often excluded from assessments or frailty definitions.
- However, frailty is associated with an increased risk of mild cognitive impairment and an increased rate of cognitive decline with aging



Prevalence and Relevance of Frailty

- Up to 15% of community dwelling older adults, higher in assisted living communities, cancer patients (~40%)
- Predicts hip fractures, disability, hospitalization, surgical outcomes
- Mortality increases (1.7-5 times depending on the definition)

Physical Frailty Phenotype (PFP)

- Weight loss (more than 10 lbs or 5% over the previous year)
- Weakness (grip strength)
- Exhaustion (self-report)
- Walking Speed (>6-7s to walk 15 feet)
- Physical Activity (<383♂ or 270♀ Kcals/week)
  - Not Frail: 0
  - Intermediate: 1-2
  - Frail: ≥3

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

Frailty Index

- Ratio of deficits present out of the total number of possible deficits, gives a continuous score from total fitness (0) to total frailty (1)
  - 0-0.1: not frail
  - 0.11-0.2: vulnerable
  - 0.21-0.45: frail
  - 0.46-1: Most frail

Blodgett et al. Archives of Gerontology and Geriatrics 60 (2015) 464–470

Table 1
46 deficits included in frailty index.

Comorbidities	*Signs/symptoms*
• Stroke	• Heart rate at rest
• Thyroid condition	• Systolic blood pressure
• Cancer	• Cough regularly
• Heart attack	• Leaked/lost control or urine
• Heart disease	• General vision
• Ever had high blood pressure	• Difficulty seeing steps/curbs in dim light
• Angina/angina pectoris	• General hearing
• Osteoporosis	• Confusion or inability to remember things
• Diabetes	
• Arthritis	*Lab values*
• Ever had broken hip	• Homocysteine (μmol/L)
	• Folate, serum (nmol/L)
• Cataract operation	• Glycohemoglobin (%)
• Weak/failing kidneys	• Red blood cell count (million cells/μL)
	• Hemoglobin (g/dL)
Function	• Red cell distribution width (%)
• Difficulty using fork and knife	• Lymphocyte percent (%)
• Difficulty dressing yourself	• Segmented neutrophils percent (%)
• Difficulty getting in/but of bed	
• Difficulty standing up from armless chair	*Other*
• Difficulty managing money	• Medications
• Difficulty preparing meals	• Self-reported health
• Difficulty standing for long periods of time	• Health compared to 1 year ago
• Difficult stooping, crouching, kneeling	• Frequency of healthcare use
• Difficulty grasping/holding small objects	• Overnight hospital stays
• Difficulty lifting or carrying	
• Difficulty pushing or pulling large objects	
• Difficult attending social event	

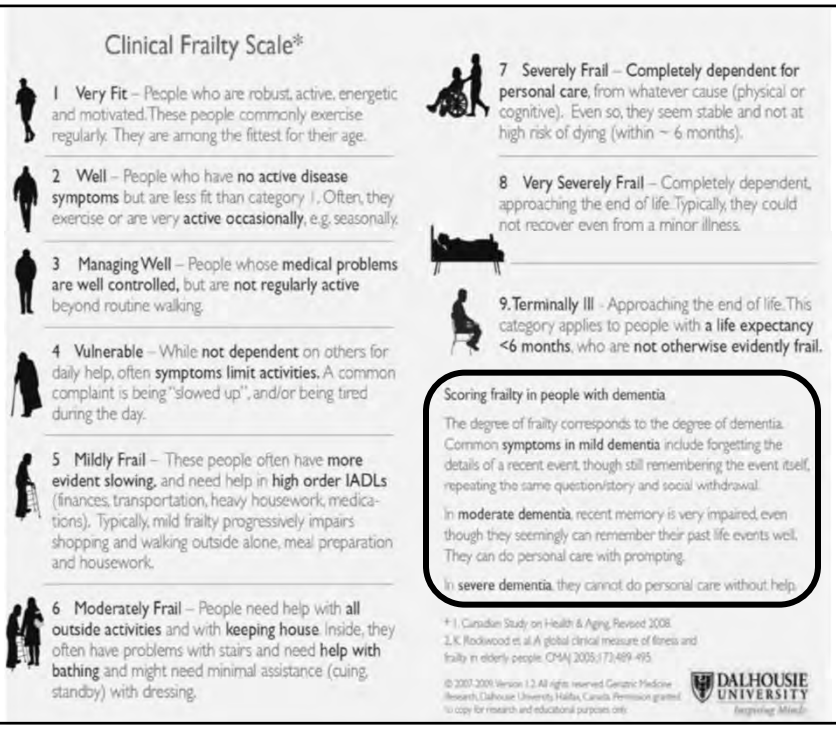
FRAIL (1=Yes, 0=No; 1-2 prefrail, >2 Frail)

- **F**atigue ("Have you felt fatigued? Most or all of the time over the past month?")
- **R**esistance ("Do you have difficulty climbing a flight of stairs?")
- **A**mbulation ("Do you have difficulty walking one block?")
- **I**llnesses ("Do you have: hypertension, diabetes, cancer, chronic lung disease, heart attack, CHF, angina, asthma, arthritis, stroke, and kidney disease?") Five or greater = 1, fewer than 5 = 0
- **L**oss of weight (">5% weight loss in the past year?")

Study of Osteoporosis (SOF Index)

(1=Yes, 0=No)

- Requires at least two of three components
  - weight loss (5% over the previous year)
  - The inability to rise from a chair 5 times without the use of arms
  - Self-reported reduced energy level ("Do you feel full of energy?, or "Over the past week or so, did you feel like you could not get going 3 or more days?")
- Frailty status was defined as robust (0 components), prefrail (previously referred to as "intermediate"; one component), and frail (2 or more components).



Clinical Frailty Scale*

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

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

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

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

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

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

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

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

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

Scoring frailty in people with dementia

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

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

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

* 1. Canadian Study on Health & Aging. Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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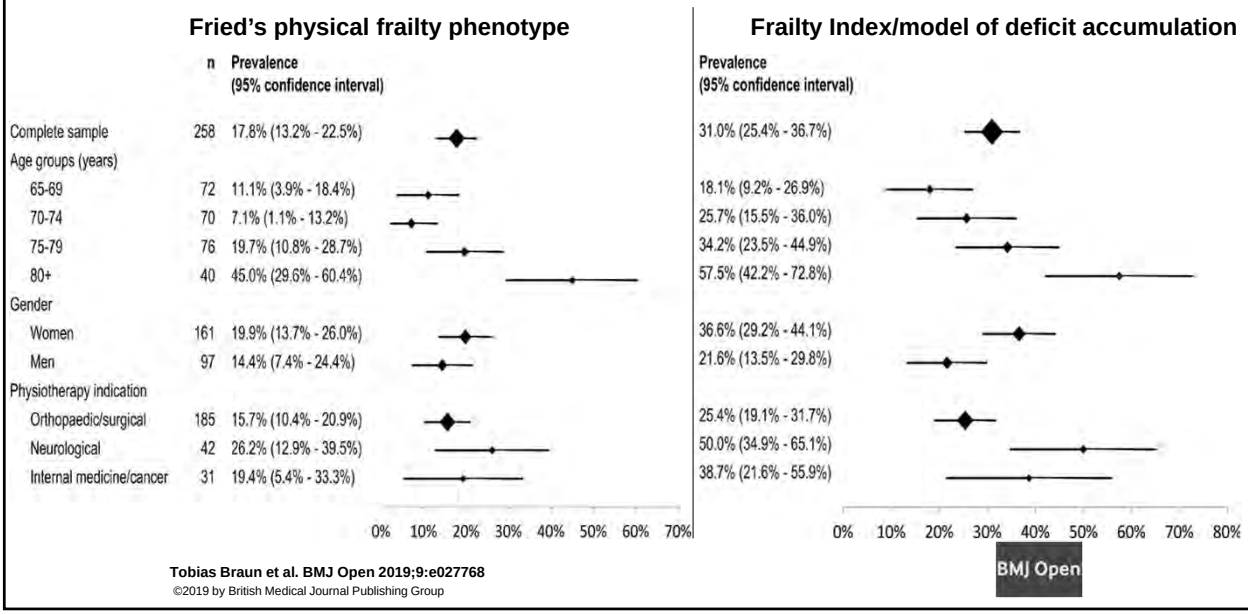
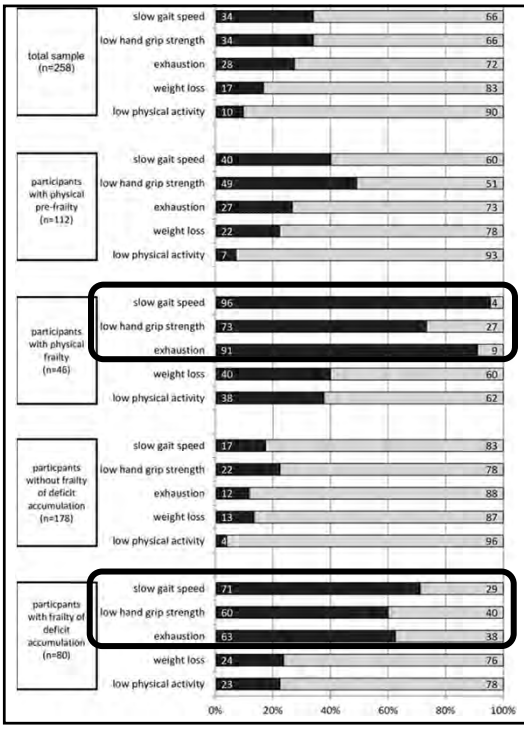
The prevalence of physical frailty according to groups for sex, age and physiotherapy indication



Tobias Braun et al. BMJ Open 2019;9:e027768

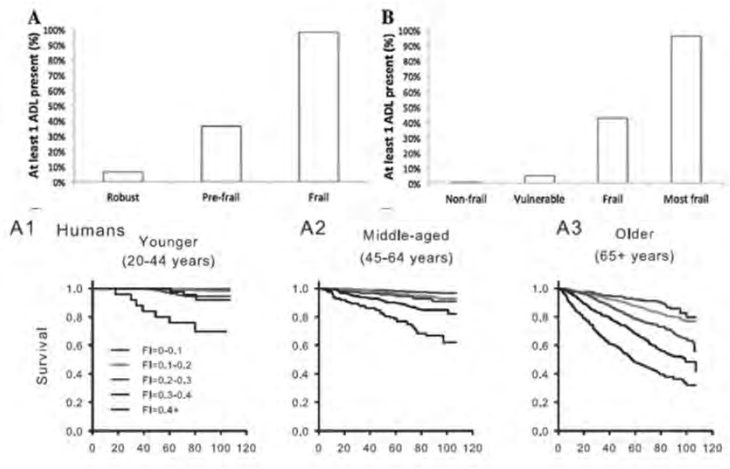


Frequency of physical frailty phenotype deficits in the subgroups of participants.

Tobias Braun et al. BMJ Open 2019;9:e027768

BMJ Open

Frailty and Outcomes



Rockwood et al. Scientific reports 2017
Blodgett et al. Archives of Gerontology and Geriatrics (2015)
Kiely et al. JAGS 2009

Table 4. Association Between Frailty (Two Indexes) and Overnight Hospitalization and Emergency Department Visits

Frailty Category	Odds Ratio (95% Confidence Interval) *P*-Value: Study of Osteoporotic Fractures Frailty Index (n = 765)	Cardiovascular Health Study Frailty Index (n = 760)
Overnight hospitalizations		
Unadjusted		
Robust	Referent	
Prefrail	2.61 (1.79–3.78) <.001	2.06 (1.49–2.86) <.001
Frail	4.05 (1.94–8.47) <.001	5.54 (3.28–9.35) <.001
Adjusted*		
Robust	Referent	
Prefrail	2.64 (1.74–4.01) <.001	1.97 (1.37–2.84) <.001
Frail	3.49 (1.53–7.98) .003	4.45 (2.42–8.18) <.001
Emergency department visits		
Unadjusted		
Robust	Referent	
Prefrail	2.29 (1.58–3.33) <.001	1.60 (1.17–2.17) .003
Frail	4.56 (2.02–10.33) <.001	4.82 (2.78–8.35) <.001
Adjusted*		
Robust	Referent	
Prefrail	2.19 (1.43–3.33) <.001	1.34 (0.95–1.89) .10
Frail	3.54 (1.43–8.79) .006	3.10 (1.64–5.86) <.001

Specialty	Frailty Prevalence	Instrument(s) Used	Findings
Cardiology	10% to 60% among older adults with cardiovascular disease (CVD)[58]	Gait speed as a single measure, the frailty phenotype, and the clinical frailty scale[58]	• Two-fold increase in mortality for frail older CVD patients across a broad spectrum of cardiovascular pathologies and therapies[58] • Utilized as a component of patient selection for invasive and potentially high-risk therapies[59]
Infectious disease: Human immuno-deficiency virus (HIV)	15% among HIV-infected drug users; 10% among persons with AIDS-defining illness, after initiating combination anti-retroviral therapy (cART)[60]	Modified version of the frailty phenotypes, the frailty index, and the Veterans Aging Cohort Study (VACS) index[61]	• Three-fold increase in mortality for frail HIV-infected adults, independent of comorbidity and HIV disease stage[60] • Worse prognosis (AIDS, death) for HIV-infected adults with frailty before initiating cART than for those without pre-cART frailty[62]
Nephrology	Average of 36.8% among middle-aged to older adults with end-stage Renal Disease (ESRD)[63]	Modified version of the frailty phenotype[63]	• Among patients with ESRD, frailty is associated with falls,[64] mortality and hospitalization,[65] and health related quality of life[66] • Frailty information may help to guide which ESRD patients are determined to be most suitable for kidney transplant[67]
Oncology	42% median (range 6–86%) among older cancer 68 patients	PFP and the Vulnerable Elders Survey used to screen for patients who would most benefit from a full Comprehensive Geriatric Assessment[68,69]	• Frailty is predictive of all-cause and post-operative mortality, chemotherapy intolerance, and post-operative complications in cancer patients[68] • Routine frailty (and fitness) assessments can help guide treatment,[68] and frailty is associated with cancer treatment recommendations[70]
Surgery	41.8–50.3% among older patients undergoing elective cardiac and non-cardiac surgery[71]	Frailty phenotype, Deficit Accumulation Index, and Edmonton Frail Scale[71,72]	• Utility of frailty has been proposed for a number of purposes: preoperative risk assessment, trauma triage, prehabilitation to modify risk, tailored anesthesia administration, team-based care options, delirium prevention and decision making for palliative care[73] • In preoperative risk assessment, recent studies have shown that frailty predicts postoperative outcomes in older patients receiving elective surgery or kidney transplant (regarded as internal stressors), even after accounting for the conventional measures used in preoperative risk assessment[72,74,75]

Frailty Screening in Subspecialties

Waltson et al. Clin Geriatr Med. 2018

Mechanisms of Frailty

- Hormones (sex steroids, GH, cortisol, Vit D)
- Inflammation (IL-6, hs-CRP, WBC and monocyte count)
- Sarcopenia

Potential as therapeutic targets is unknown

Assessment

- >70 years-old and those with weight loss >5% should be screened
- Comorbidities
  - Depression
  - Malignancy or hematologic disease
  - Rheumatologic disease – Polymyalgia rheumatica, vasculitis
  - Endocrinologic disease – Hyper- or hypothyroidism, diabetes mellitus
  - Cardiovascular or renal disease
  - Nutritional deficits – Vitamin deficiencies
  - Neurologic disease – Parkinson disease, vascular dementia

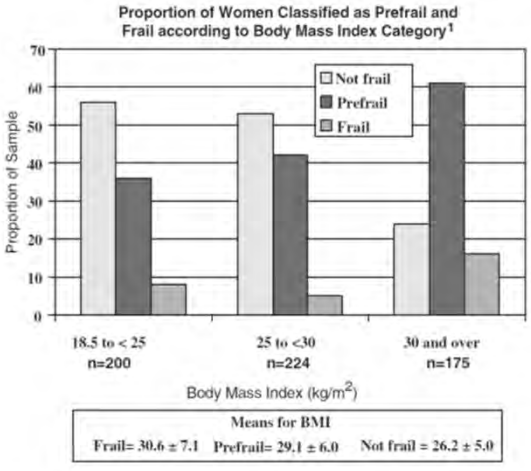
Assessment

- Physical examination should include assessment of the patient's function
  - walking speed, grip, chair stand
- Complete blood count
- Basic metabolic panel
- Liver biochemical tests
- Vitamin B12
- Vitamin D
- Thyroid-stimulating hormone (TSH)

Goals for Frailty Interventions

- Improve QOL
- Prevent worsening chronic disease and functional decline
- Reduce risk for adverse outcomes
- Risk assessment to guide therapeutic options and goal setting

Frailty and BMI



Blaum et al. JAGS 2005

Exercise

- Increased mobility, enhanced performance of activities of daily living (ADLs), improved gait, decreased falls, improved bone mineral density, and increased general wellbeing
  - Start low and go slow and individualized prescription
  - Consider physical therapy consult, focusing on functional exercises
  - Goals is 150 minutes per week of moderate-intensity aerobic activity (rarely met)
  - Patients will also benefit from balance and strength training
- OT for those with ADLs limitations

Exercise Intensity

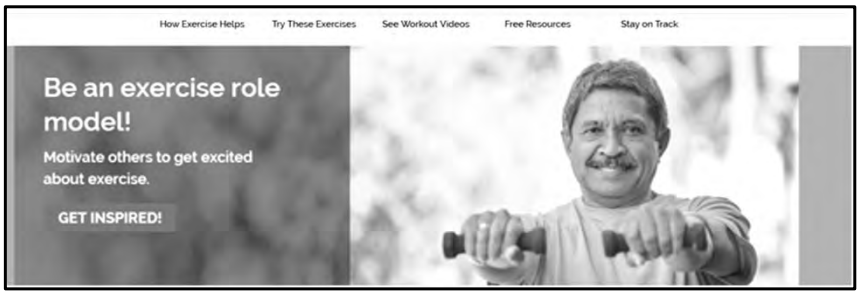
Light **<3.0 METs**	**Moderate** **3.0-6.0 METs**	**Vigorous** **>6.0 METS**
•Walking slowly •Sitting using computer •Standing light work (cooking, washing dishes) •Fishing sitting •Playing most instruments	•Walking very brisk (4 mph) •Cleaning heavy (washing windows, vacuuming, mopping) •Mowing lawn (power mower) •Bicycling light effort (10-12 mph) •Bad minton recreational •Tennis doubles	•Hiking •Jogging at 6 mph •Shoveling •Carrying heavy loads •Bicycling fast (14-16 mph) •Basketball game •Soccer game •Tennis singles

https://www.hsph.harvard.edu/nutritionsource/

Go4Life®

NIH National Institute on Aging

…is the exercise and physical activity campaign for older adults from the National Institute on Aging at NIH



www.nia.nih.gov/Go4Life

Go4Life is a registered trademark of the US Department of Health and Human Services.

U.S. Physical Activity Guidelines for Americans

NIH National Institute on Aging

For substantial health benefits, adults should do <u>at least</u>

- **150 minutes (2 hours and 30 minutes) a week**
  of moderate-intensity physical activity

OR

- **75 minutes (1 hour and 15 minutes) a week**
  of vigorous-intensity aerobic physical activity,

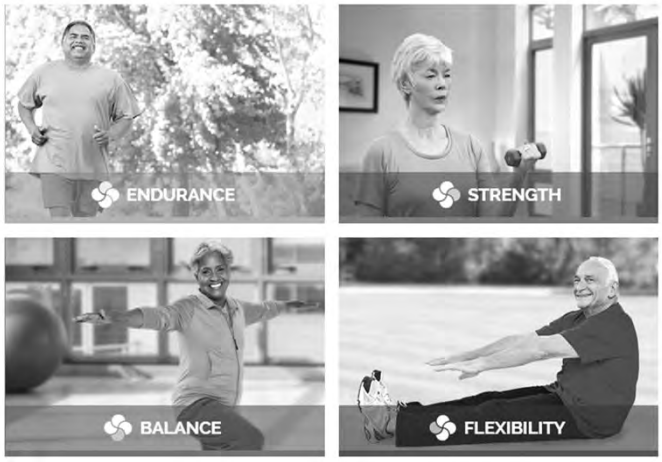
OR

- **an equivalent combination**
  of moderate- and vigorous-intensity aerobic activity.

Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.

The 4 Types of Exercises Recommended **for** Adults 50+ are

1. **Endurance**
2. **Strength**
3. **Balance**
4. **Flexibility**



<u>Endurance Exercises…</u>

- ✓ **Increase your breathing and heart rate and improve the health of your lungs, heart and circulatory system.**
- ✓ ***<u>Examples</u>*: Swimming, running, <u>brisk</u> walking, biking, dancing, basketball.**
- ✓ ***<u>Endurance activities make it easier to</u>***
  - **walk uphill and not get short of breath**
  - **push your grandchild on a swing**

Strength Exercises…

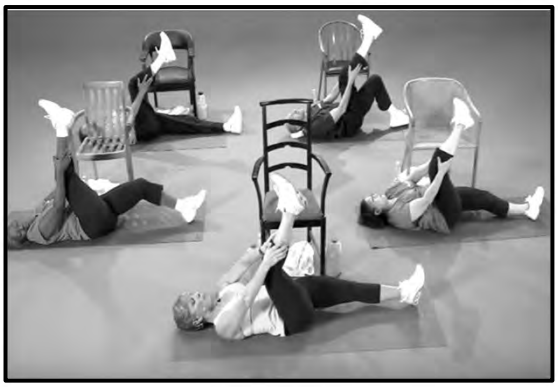
- ✓ Use weight or resistance to increase muscle strength.
- ✓ ***Examples***: lifting weights, using resistance bands, leg lifts, squats, arm curls.
- ✓ ***Increased muscle strength can help you***
  - Climb stairs
  - Carry groceries
  - Open jars

Balance Exercises…

- ✓ Improve your ability to control your body's position, whether moving or still.
- ✓ ***Examples:*** stand-on-one-foot, heel-to-toe walk, tai chi.
- ✓ ***Good balance can help***
  - Prevent falls
  - Stand on tiptoe without teetering
  - Walk on uneven sidewalks without falling

Flexibility Exercises…

- ✓Use stretching to help you stay flexible and limber.
- ✓***Examples***: shoulder stretch, back of leg stretch, calf stretch, ankle stretch, yoga.
- ✓***Being more flexible*** can help you
  - Feel less stiff when getting out of bed
  - Bend over to tie your shoe or put on socks
  - Button a shirt or blouse



How to Exercise Safely (8)

- Check with your doctor or healthcare provider if you have specific health conditions or if you are going to significantly increase your level of effort.

How to Exercise Safely (4)

When doing ***Endurance*** exercise…

- ❑ **Listen to your body. Your breathing may become faster, but you should still be able to talk.**

How to Exercise Safely (5)

When doing ***Strength*** exercise…

- ❑ **Don't exercise the same muscle group on any 2 days in a row.**

How to Exercise Safely (6)

When doing ***Balance*** exercise…

- ❑ **Have that sturdy chair handy or a person nearby to hold on to for your balance exercises if you feel unsteady.**

Exercise and Everyday Activities Go Together

Exercise and physical activity are good for your health. In addition, improving your endurance, strength, balance, and flexibility can help you do many of your everyday activities. For example:

Endurance activities will make it easier for you to:

- Push your grandchildren on the swings
- Vacuum
- Rake leaves

Strength training can maintain your ability to:

- Carry a full laundry basket from the basement to the second floor
- Carry your smaller grandchildren
- Lift bags of mulch in the garden

Flexibility, or stretching, exercises make it possible for you to:

- Look over your shoulder to see what's behind you as you back the car out of the driveway
- Make the bed
- Bend over to tie your shoes

Balance exercises can help you:

- Stand on tiptoe to reach something on the top shelf
- Walk up and down the stairs
- Walk on an uneven sidewalk without falling

Start Moving! (4)

NIH National Institute on Aging

- **Click on See Workout Videos and try the 10- 15- 20- or 60-minute sample workouts.****

10-Minute Sample Workout for Older Adults

15-Minute Sample Workout for Older Adults

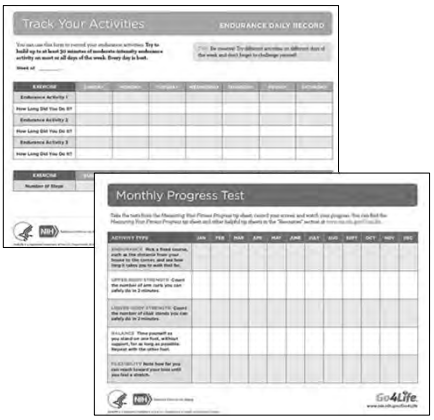
20-minute Sample Workout for Older Adults

60-minute Sample Workout for Older Adults

****Also available on YouTube***

Keep Going! (1)

- **Use these *Go4Life* tracking tools to**
  - **(1) track your exercise activities and**
  - **(2) see your progress**



Nutrition

- Cachexia (cancer, COPD, CHF, CKD, liver disease, infections, etc)
- Food insecurity/access
- Chewing/swallowing problems
- Oral health
- Drug-induced
- GI problems
- Depression, dementia
- Dietary restrictions

Malnutrition

- Two or more of the following six characteristics:
  - Insufficient energy intake
  - Weight loss
  - Loss of muscle mass
  - Loss of subcutaneous fat
  - Localized or generalized fluid accumulation that may mask weight loss
  - Diminished functional status as measured by handgrip strength
- Protein intake 1-1.2 g/Kg (IOM 0.8 g/kg)
- Caloric needs based on physical activity, sex and body weight

Nutrition: Caloric/Protein supplements

- Limited data on efficacy and safety
- Dietitian referral
- Considered in specific scenarios
  - Weight loss, cachexia, low BMI, malnutrition, critically ill
- Take into account:
  - Financial burden, side effects (diarrhea, nausea, hyperglycemia)

Meta-analysis of trials of oral protein and energy supplementation in older people, (excluding cancer or critical care patients)

- Body weight increase 2.2% on average
- Mortality was reduced in undernourished patients (RR 0.79, 95% CI 0.64-0.97)
- The risk of complications was reduced in 24 trials (RR 0.86, 95% CI 0.75 to 0.99)
- Few trials suggest any functional benefit
- No difference in length of stay
- Adverse effects included nausea or diarrhea

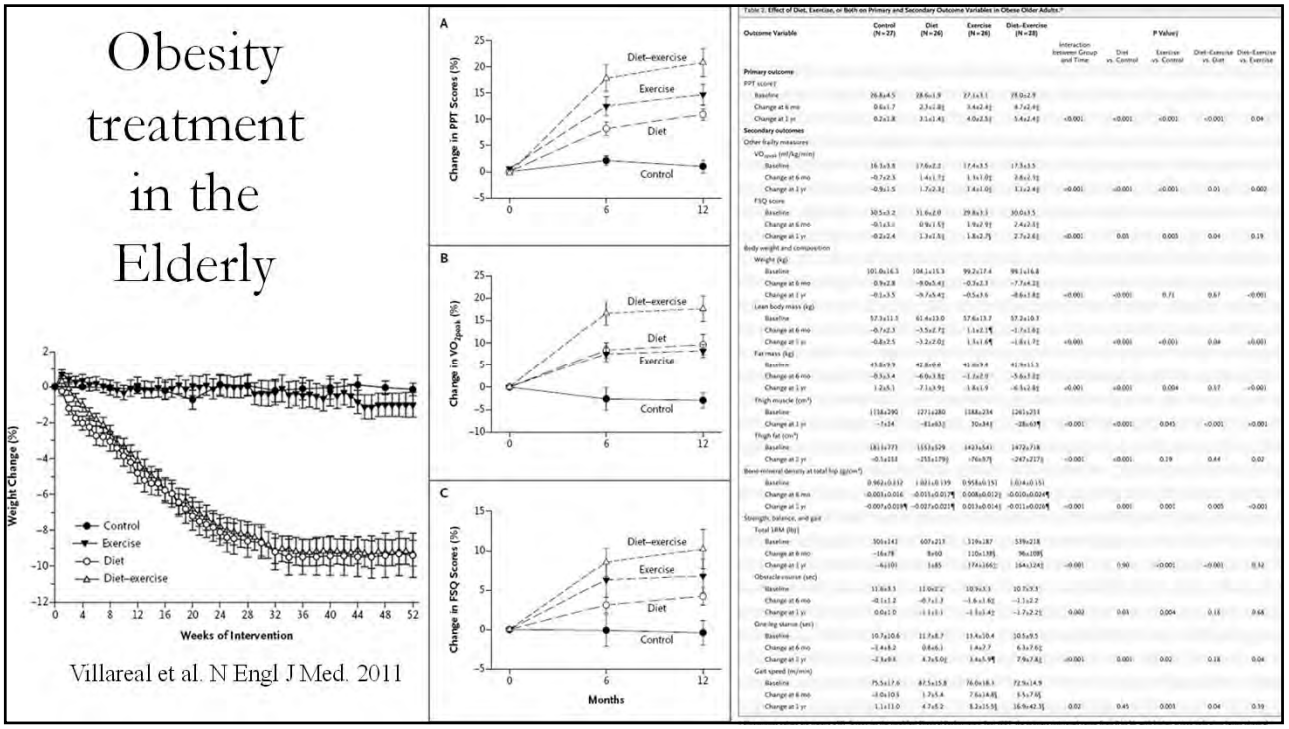
Cochrane Systematic Review, 2009

Nutrition-Calcium and Vit D

- Calcium (1.2 g elemental Ca daily)
- Vit D
  - Goal 25 OH Vit D level >30ng/mL (IOM recommends at least >20ng/mL)
  - At least 800-1000 IU (often 2,000 IU) daily are needed for maintenance
  - Higher doses are usually required for replacement

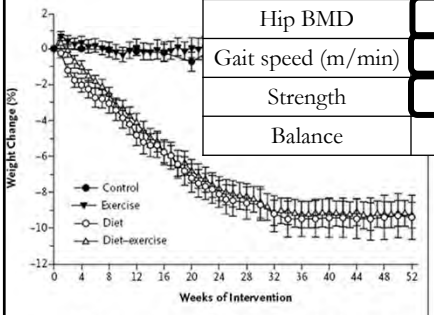
Obesity treatment in older patients

- Energy restriction with a hypocaloric diet results in the loss of approximately one-quarter of lean mass per unit weight, which could worsen sarcopenia and osteopenia
- Calorie restriction without resistance training leads to the loss of muscle mass and loss of handgrip strength of up to 4.6% and 1.7 kg, respectively

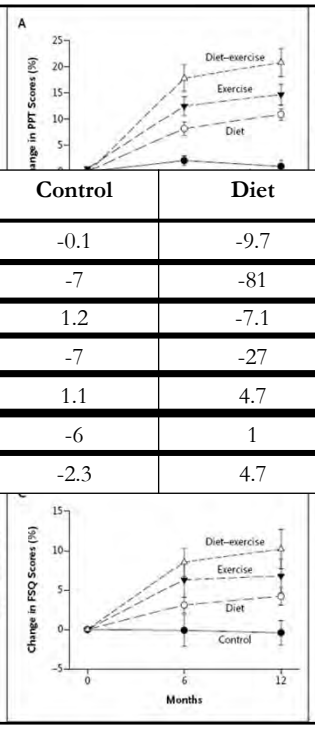


Obesity treatment in t Eld

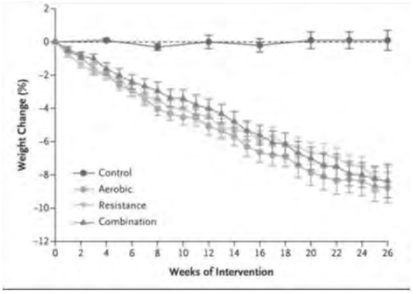
	Control	Diet	Exercise	Both
Body weight (Kg)	-0.1	-9.7	-0.5	-8.6
Muscle mass(cm^3)	-7	-81	30	-28
Fat mass (Kg)	1.2	-7.1	-1.8	-6.3
Hip BMD	-7	-27	13	-11
Gait speed (m/min)	1.1	4.7	8.2	16.9
Strength	-6	1	174	164
Balance	-2.3	4.7	3.4	7.9



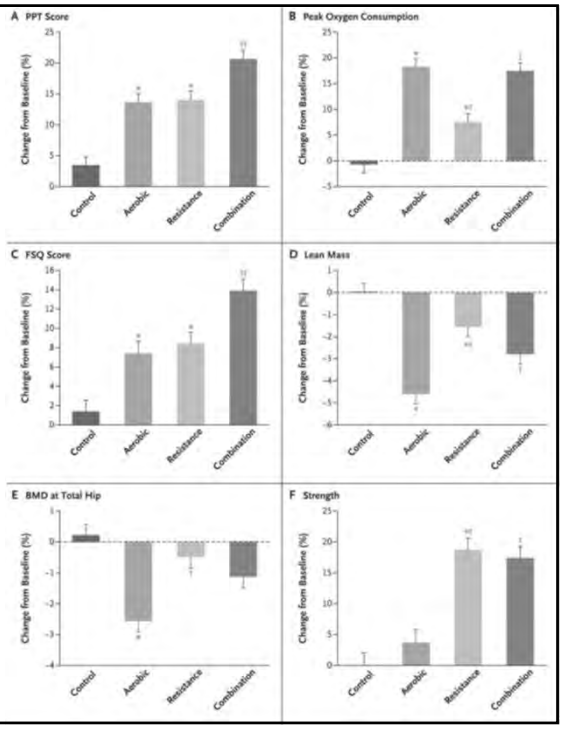
Villareal et al. N Engl J Med. 2011



Obesity treatment and frailty



Villareal et al. N Engl J Med. 2017



Medications

- Review medications (interactions, side effects)
- Testosterone deficiency in men (controversial)
  - Men with persistently and unequivocally low T levels, symptoms of hypogonadism (low libido, ED) and no contraindications
  - No consistent effect of T. on fatigue or physical function
- GH (not indicated)
- Orexigenic agents: megestrol, dronabinol
  - limited efficacy, side effects

T Trials (Snyder PJ. Endocr Rev. 2018)

- Testosterone treatment causing levels to go from unequivocally low at baseline to mid-normal for young men for 12 months:
  - Increased sexual activity, sexual desire, and erectile function
  - Increased the 6MWD (but not in those with low walking speed)
  - Did not increase cognition or energy but slightly improved mood and depressive symptoms.
  - Increased hemoglobin, BMD, coronary artery non-calcified plaque volume
  - Was not associated with CV or prostate adverse events
    - A larger safety trial is ongoing (TRAVERSE)

Case presentation

- 68 yo female with a history of severe COPD on home O2 intermittently,
- Head and neck cancer s/p resection + XRT in 2018, currently in remission
- Has osteoporosis, on bisphosphonates since 2104, depression
- Complaints of 11% weight loss over the last year, dysphagia, fatigue, SOB, poor appetite and
- Lives with partner in rural area, sedentary, smokes ~5 cig/day

Case presentation

- On Ca+D 500mg/400 IU daily, Bupropion, Zoledronic acid yearly, albuterol, tiotropium, nometasone
- Vitals: 135/75, 102, 22, O_2 sat 88% on room air, BMI 16
- Dry oral mucosae, actinic dermatitis over the neck, well healed scar
- Tachycardic, decreased breath sounds B, no wheezing
- No edema
- Unable to stand from chair without using her arms
- Walking speed: 12 seconds to walk 15ft

Case presentation

- Is she frail?
  - How can we diagnose frailty in her case?
- What preventive measures or treatments, if any, should we consider?

Assessment

- Physical examination should include assessment of the patient's function
  - walking speed, grip, chair stand **Grip 18 Kg**
- Complete blood count **WNL**
- Basic metabolic panel **CO2 35 mEq/L**
- Liver biochemical tests **WNL**
- Vitamin B12 **WNL**
- Vitamin D **16 ng/mL**
- Thyroid-stimulating hormone (TSH) **12 micro IU/mL**

Assessment

- >70 years-old and those with weight loss >5% should be screened **WEIGHT LOSS**
- Comorbidities
  - Depression **YES**
  - Malignancy or hematologic disease **YES**
  - Rheumatologic disease – Polymyalgia rheumatica, vasculitis
  - Endocrinologic disease – Hyper- or hypothyroidism, diabetes **YES**
  - Cardiovascular or renal disease
  - Nutritional deficits – Vitamin deficiencies **VIT D DEF**
  - Neurologic disease – Parkinson disease, vascular dementia

Physical Frailty Phenotype (PFP)

- Weight loss (more than 10 lbs or 5% over the previous year)
- Weakness (grip strength)
- Exhaustion (self-report)
- Walking Speed (>6-7s to walk 15 feet)
- Physical Activity (<383♂ or 270♀ Kcals/week)
  - Not Frail: 0
  - Intermediate: 1-2
  - Frail: ≥3

Wang et al. J Orthop Sports Phys Ther. 2018 Sep;48(9):685-693Ainsworth BE, et al. Compendium of Physical Activities: an update of activity codes and MET intensities. Medicine and Science in Sports and Exercise. 2000;32:S498–S516
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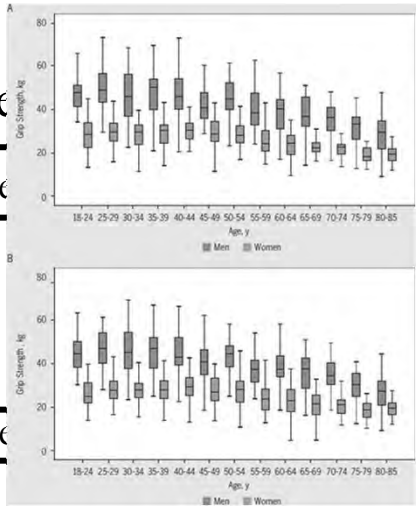

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Frailty Index

- Ratio of deficits present out of the total number of possible deficits, gives a continuous score from total fitness (0) to total frailty (1)
  - 0-0.1: not frail
  - 0.11-0.2: vulnerable
  - 0.21-0.45: frail
  - 0.46-1: Most frail

Table 1
46 deficits included in frailty index.

Comorbidities	*Signs/symptoms*
• Stroke	• Heart rate at rest
• Thyroid condition	• Systolic blood pressure
• Cancer	• Cough regularly
• Heart attack	• Leaked/lost control or urine
• Heart disease	• General vision
• Ever had high blood pressure	• Difficulty seeing steps/curbs in dim light
• Angina/angina pectoris	• General hearing
• Osteoporosis	• Confusion or inability to remember things
• Diabetes	
• Arthritis	*Lab values*
• Ever had broken hip	• Homocysteine (μmol/L)
	• Folate, serum (nmol/L)
• Cataract operation	• Glycohemoglobin (%)
• Weak/failing kidneys	• Red blood cell count (million cells/μL)
	• Hemoglobin (g/dL)
Function	• Red cell distribution width (%)
• Difficulty using fork and knife	• Lymphocyte percent (%)
• Difficulty dressing yourself	• Segmented neutrophils percent (%)
• Difficulty getting in/but of bed	
• Difficulty standing up from armless chair	*Other*
• Difficulty managing money	• Medications
• Difficulty preparing meals	• Self-reported health
• Difficulty standing for long periods of time	• Health compared to 1 year ago
• Difficult stooping, crouching, kneeling	• Frequency of healthcare use
• Difficulty grasping/holding small objects	• Overnight hospital stays
• Difficulty lifting or carrying	
• Difficulty pushing or pulling large objects	
• Difficult attending social event	

14/46=0.3

Blodgett et al. Archives of Gerontology and Geriatrics 60 (2015) 464–470

Frailty Interventions

- Medication review
- Referral to Nutrition determined she was not meeting caloric needs: Nutritional supplements
- Referral to pulmonary for optimization of COPD management
- Pulmonary rehab and exercise program guided by PT
- Vit D replacement (Ergocalciferol 50,000 IU weekly for 3 months)
- Started smoking cessation program
- Levothyroxine 25 mcg daily
- Artificial saliva

Conclusions

- Frailty is common in the elderly and is associated with significantly higher morbidity and mortality
- Diagnosing frailty and pre-frailty using one of the instruments available can be useful in risk stratification and in identifying patients who will most benefit from treatment
- Manage comorbidities taking into account overall status and goals of care
- Long-term multi-domain lifestyle intervention of nutrition counseling and physical activity and multicomponent strategies are likely to benefit these patients.