

## Physiotherapy Approaches in Medically Complex and Frail: Resetting Our Perspective

**Jennifer M. Bottomley, PhD<sup>2</sup>, MS, PT**

President, IPTOP-WCPT

Associate Professor – Simmons University,  
Dept of Physical Therapy, Boston, MA - USA



## Managing Frailty as a Long-Term Condition

- Frailty a distinctive late-life health state
  - Minor stressors = adverse health outcomes
- Two established international models
  - Frailty phenotype
  - Cumulative deficit model
- Models identify risk of a range of adverse outcomes (e.g., dependency, institutionalization, premature mortality)

## A New Perspective on Frailty

- Shares key features of long-term conditions
- Not routinely identified or coded as a diagnosis in primary or secondary care
  - As a result: not a visible condition for health service planning and delivery



## Argument:

- Explore what this means in terms of a more proactive, preventative health and social care response
- Considering proactive, intervention approaches in Physiotherapy
  - Screening – Intervening
  - Maintaining highest maximal functional capabilities

## New Perspective: Rehabilitation for Frailty as a LT Condition

- Each long-term condition has attracted disease-specific management guidelines
- Care pathways designed to ↓ variations in care, improve outcomes, and lower cost
- Frailty shares key features – it can't be cured; it's costly; it's progressive; it adversely impacts life's experience; it has episodic crisis

## Systematic Review & Meta-analysis of Comprehensive Geriatric Assessment

- Improved rates of independence at D/C
- Decreased institutionalization
- Decreased mortality
- Subgroup analysis reported results robust for needs-based services
  - Key Element: Episode of Physical Rehabilitation

Ellis G, Whitehead M, O'Neill D, Langhorne P, Robinson D.  
Comprehensive geriatric assessment for older adults. Cochrane Database Syst Rev 2011

De Vries NM, Staal JB, Olde Rikkert MGM, Nijhuis-van der Sanden. Evaluative frailty index for physical activity (EFIP): A reliable and valid instrument to measure changes in level of frailty. *J Phys Ther.* 2013; 93:551-561

- Physical activity is assumed to be important in the prevention and treatment of frailty
- Unclear to what extent frailty can be influenced
- Instruments designed to assess frailty have not been validated as evaluative outcome instruments in clinical practice.
- The EFIP has been found to be reliable and valid
- Important that we use this clinically

## Control Through Appropriate Rehabilitation Strategies

- Prevent/delay functional decline
- Modifiable risk factors
  - Posture improved = function improved
  - Falls reduced by therapeutic approaches
  - Reduced functional limitations
  - Increased endurance – C-V and Pulmonary
  - Sarcopenia and nutrition potentially modifiable
  - Cognition improved by exercise
  - Increasing speed of movement

## Common Important Outcome of Comprehensive Geriatric Assessment

Evidence from intervention studies supports value of physical rehabilitation for improving mobility & physical functional

- Hubbard R, Fallah N, et al. Impact of exercise in community-dwelling older adults. *PLoS ONE* 2009; 4:e6174
- Bales C, Ritchie C. Sarcopenia: weight loss, and nutritional frailty in the elderly. *J Nutr Health Aging* 2009; 4:142

## EDUCATION - KEY IN MANAGING Balance, Functional Mobility & Slowing Progression of Frailty

- Screening – identification/management of risks
- Self-managed care – fitness; hygiene; nutrition....
- Home assessment and modifications
- Providing ongoing/periodic PT intervention
- Caring for the caregivers
- Physical therapy interventions as warranted

## Managing Pain: **PENS** Approach

### INTERDISCIPLINARY APPROACH

- **Pain:** source; intensity; tolerability; quality; location
- **Expectations/Emotions:** comfort-function-mood
- **Nutrition:** untreated pain; appetite; weight, affect on pharmacodynamics & kinetics; effect on activity
- **Sleep:** insufficient affects pain



Makris UE, Abrams RC, Gurland B. et al. Management of persistent pain in the older adult: a clinical review. *JAMA.* 2014; 312(8):825-836

Arnates PMM, Alencar MA, Dias RC, Dias JMD, Pereira LSM. Physical Therapy Treatment on Frailty Syndrome: Systematic Review. *Rev Bras Fisiol*, Sao Carlos, 2009; 13(5):365-375.

- Seven different types of interventions verified:
  - Muscle strengthening
  - Combination – balance, coordination, flexibility, reaction time and aerobic training
  - Functional training
  - General physical therapy
  - At-home physical therapy
  - Environmental adaptation and prescription of assistive device
  - Water exercises.

## Posture

**"Extension Equals Function"** JMB



Mechant RA, Banerji S, Singh G, et.al. Is trunk posture in walking a better marker than gait speed in predicting decline in function and subsequent frailty? J Am Med Dir Assoc. 2016; 17(1):65-70

## STRENGTHENING

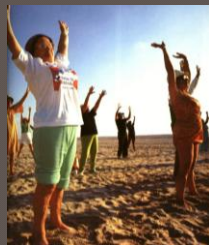


- Stress Extension
- Anterior Tibialis
- Hip Abductors and Extensors
- Knee extensors
- Shoulder extensors
- Ability to manage body weight

Durstine JL, Moore G, Painter P, Roberts S. ACSM's *Exercise Management for Persons With Chronic Diseases and Disabilities*. 3rd ed. Champaign, IL: Human Kinetics; 2009.

## Posture, Agility & Functional Mobility

- Stretching
- Posture
- Accommodation strategies
- Joint mobility
- Functional mobility



Singh MA. Exercise comes of age: Rationale and recommendations for a geriatric exercise prescription. J Gerontol A Biol Sci Med Sci. 2002; 57: (5): M262-M282.

## ENDURANCE / STAMINA



- Functional activities
- Cardiovascular
- Cardiopulmonary
- Progressive/reasonable
- Respiratory
- Muscle endurance

Liu CK, Fielding RA. Exercise as intervention for frailty. Clin Geriatr Med. 2011; 27:101-110

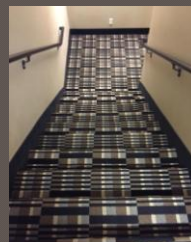
## GAIT TRAINING



- Posture / extensor strength
- Walking speed
- Cardiovascular Endurance
- Pulmonary condition
- Proper fitting shoes
- Vision /
- Environment

deGroot MH, van der Jagt-Williams HC, van Campen J, et. al. A flexed posture in elderly patients is associated with impairment in postural control during walking. Gait&Posture. 2014; 39(2):767-772

## Balance Organization & Movement Strategies



- Sensory Organization
- Increase awareness of center of gravity
- Challenging environments
- Functional activities

Mulasso A, Roppolo M, Gobbens R, Rabaglietti E. Mobility, balance and frailty in community-dwelling older adults: What is the best 1-year predictor of falls? Geriatr Gerontol International. 29 SEP 2016

## Alternative Therapies

- Balls, Hammocks, Rocking Chairs, Fitter...
- Swimming / Aquatics
- T'ai Chi, QiGong, Modified Yoga, Pilates...
- Dancing, recreation
- Modalities as warranted
- Instrumental ADL



Wolf SL, Barnhart HX, Kutner NG, et al. Reducing frailty and falls in older persons: an investigation of tai chi and computerized balance training. *J Am Geriatr Soc*. 2003;51(12):1794-1803.

## Key Points: Managing Frailty as a Long-Term Condition

- Refocusing efforts
- Screening – intervening (all disciplines)
- Addressing functional decline early – all settings
- Increasing home support
- Remarkable benefits of exercise in all conditions contributing to the long-term condition of Frailty

## IN A FRAIL ELDERLY POPULATION

ANYTHING ABOVE REST  
WORKS!!!<sub>JMB</sub>

