New Applications of High Intensity Rehab and Gait Speed in PALTC

When Failure Isn't a Bad Thing: **Improving SNF Outcomes with Progressive Rehabilitation**

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Disclosures

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- Agency for Healthcare Research and Quality (AHRQ)
- Veterans Affairs (VA)

Rehabilitation Training for CEUs

Objectives

1) Appreciate how medical **deconditioning** in older adults impairs functional mobility and increases rehospitalization risk.

2) Recognize the practical application of **walking speed** in predicting hospitalization risk, mortality, and discharge location.

3) Understand how SNF clinical teams could **use progressive rehabilitation and mobility targets** to improve patient outcomes and optimize value.

Impaired Function in Older Adults Following Hospitalization

Patients walk only 7 minutes per day in hospital [1]

68% of discharged are below pre-hospitalization function[2]

No improvement in outcomes compared to past [3]

SNF residents only walk 849 steps a day [4]

1. Villumsen et al, 2015; 2. Gill TM 2009; 3. Loyd 2020; 4. Stutzbach 2021

Archives of Physical Medicine and Rehabilitation

Volume 94, Issue 10, October 2013, Pages 1951–1958

Original article

Functional Status Impairment Is Associated With Unplanned

Arch Phys Med Rehabil. 2018 Jun;99(6):1067-1076. doi: 10.1016/j.apmr.2017.05.001. Epub 2017 Jun 3.

Functional Status Is Associated With 30-Day Potentially Preventable Hospital Readmissions After Inpatient Rehabilitation Among Aged Medicare Fee-for-Service Beneficiaries.

Middleton A[1], Graham JE[2], Ottenbacher KJ[2].

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Functional Status Predicts Acute Care Readmissions ..
Inpatient Rehabilitation in the Stroke Population

Original Research
Journal of General Internal Medicine
November 2015, Volume 30, Issue 11, pp 1688-1695

First online: 09 May 2015

Functional Status Outperforms Comorbidities in Predicting Acute Care Readmissions in Medically Complex Patients

Physical Function's relationship with **Rehospitalization**

Highest functional independence group		15% rehospitalization
Middle functional independence group		20% rehospitalization
Lowest functional independence group		**30% rehospitalization**

Functional performance measured with the **Functional Independence Measure (FIM)** by Hoyer et al. Arch. Phys Med & Rehabil. 2013;94;1951-8

Low physical activity persists

SNF

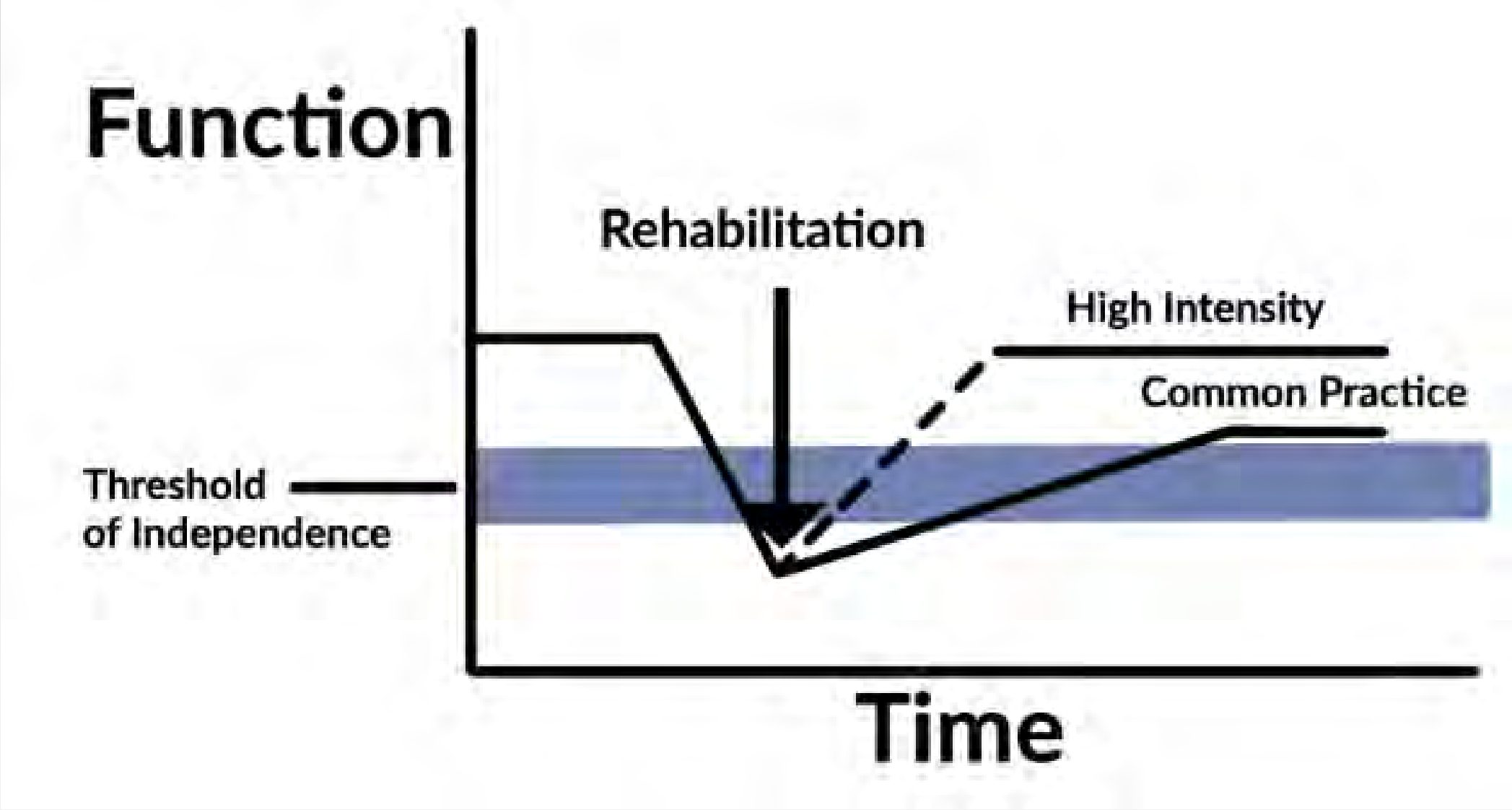
- 88% of day in bed or sitting
- 849 steps a day

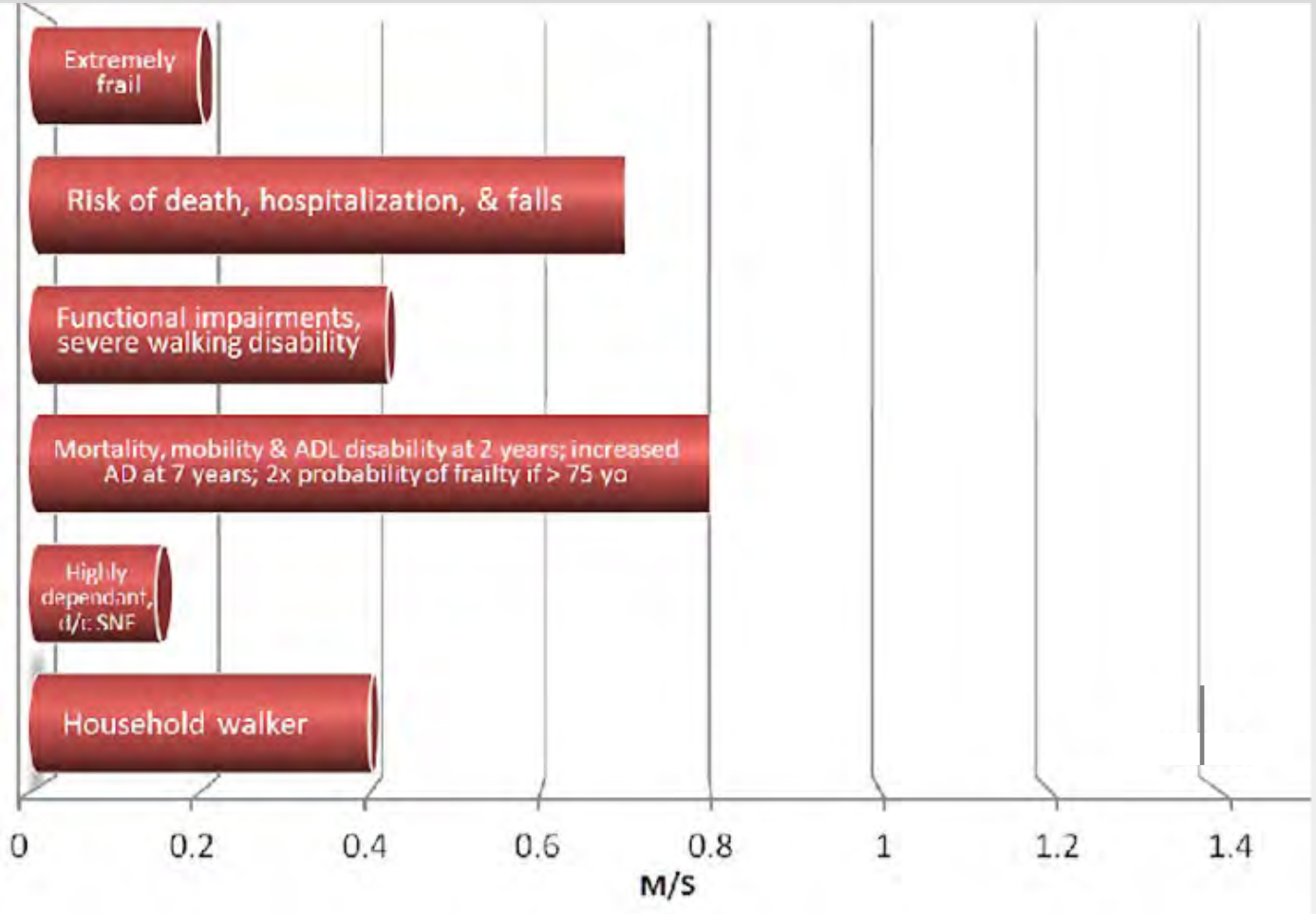
Home

- 83% of day in bed or sitting
- 922 steps a day (<10% of target)

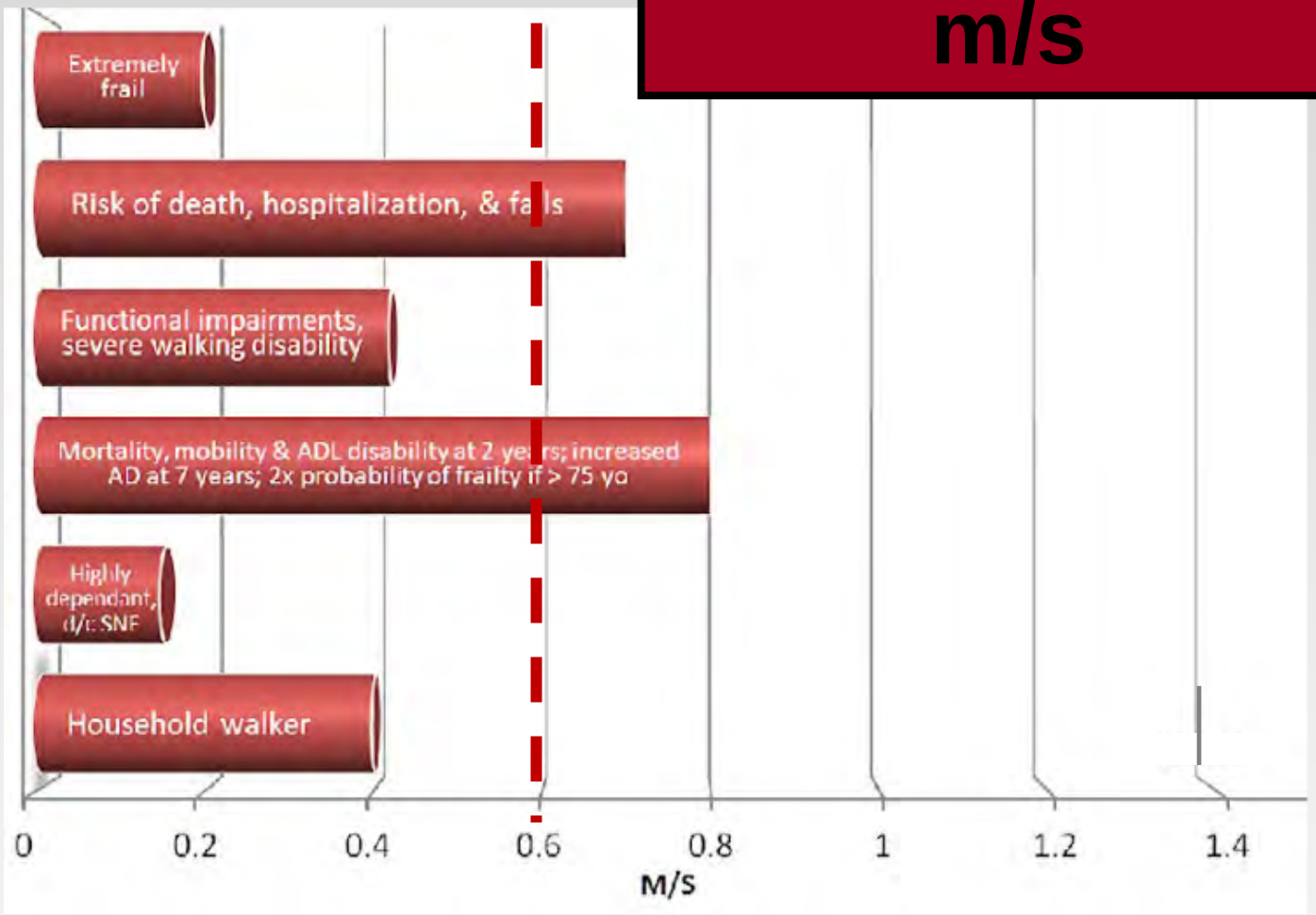
Stutzbach et al. *Disability & Rehabilitation* 2021; 1-6.

Threshold of Independence

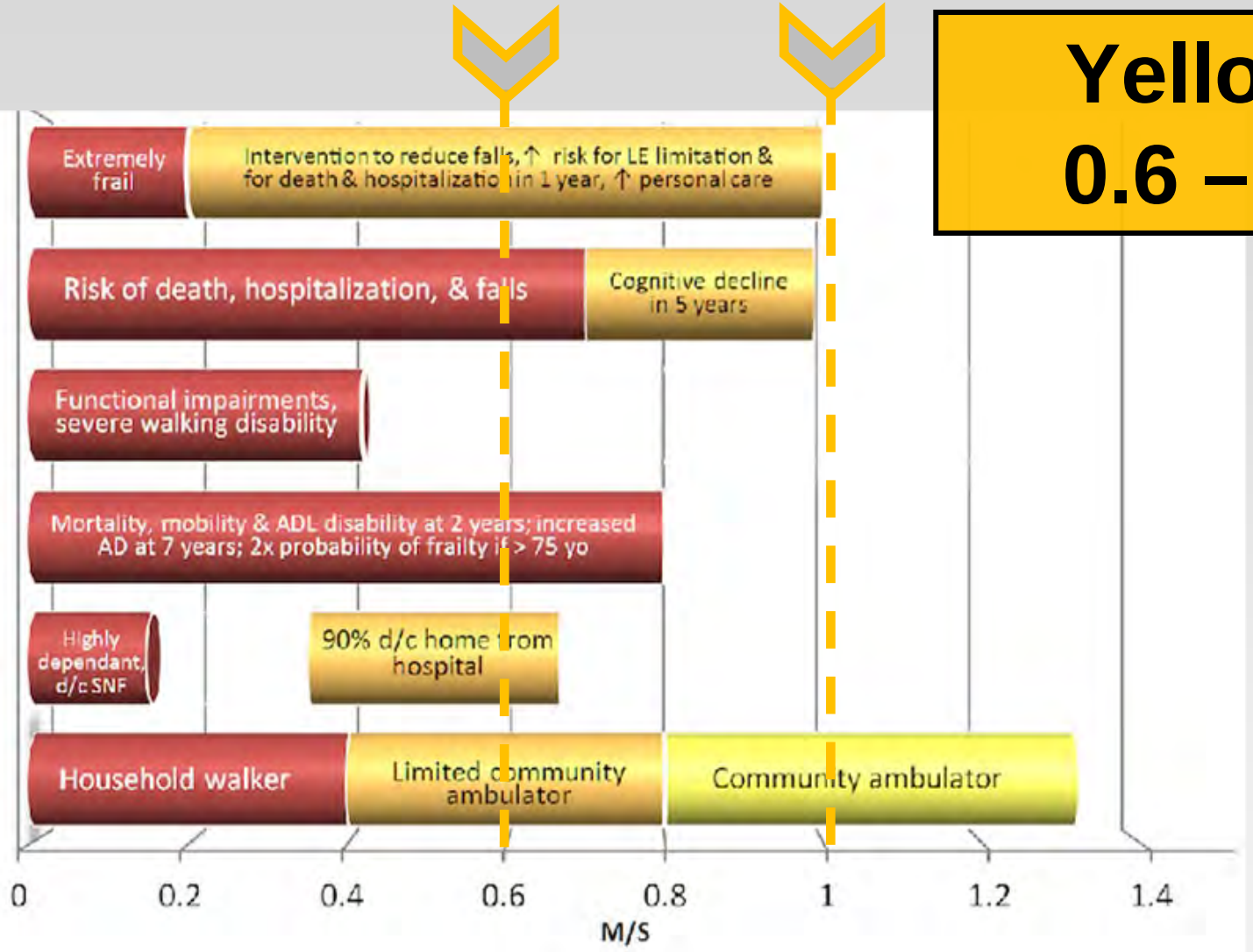



Extremely frail
Risk of death, hospitalization, & falls
Functional impairments, severe walking disability
Mortality, mobility & ADL disability at 2 years; increased AD at 7 years; 2x probability of frailty if > 75 yo
Highly dependant, d/c SNF
Household walker
0
0.2
0.4
0.6
0.8
1
1.2
1.4
M/S

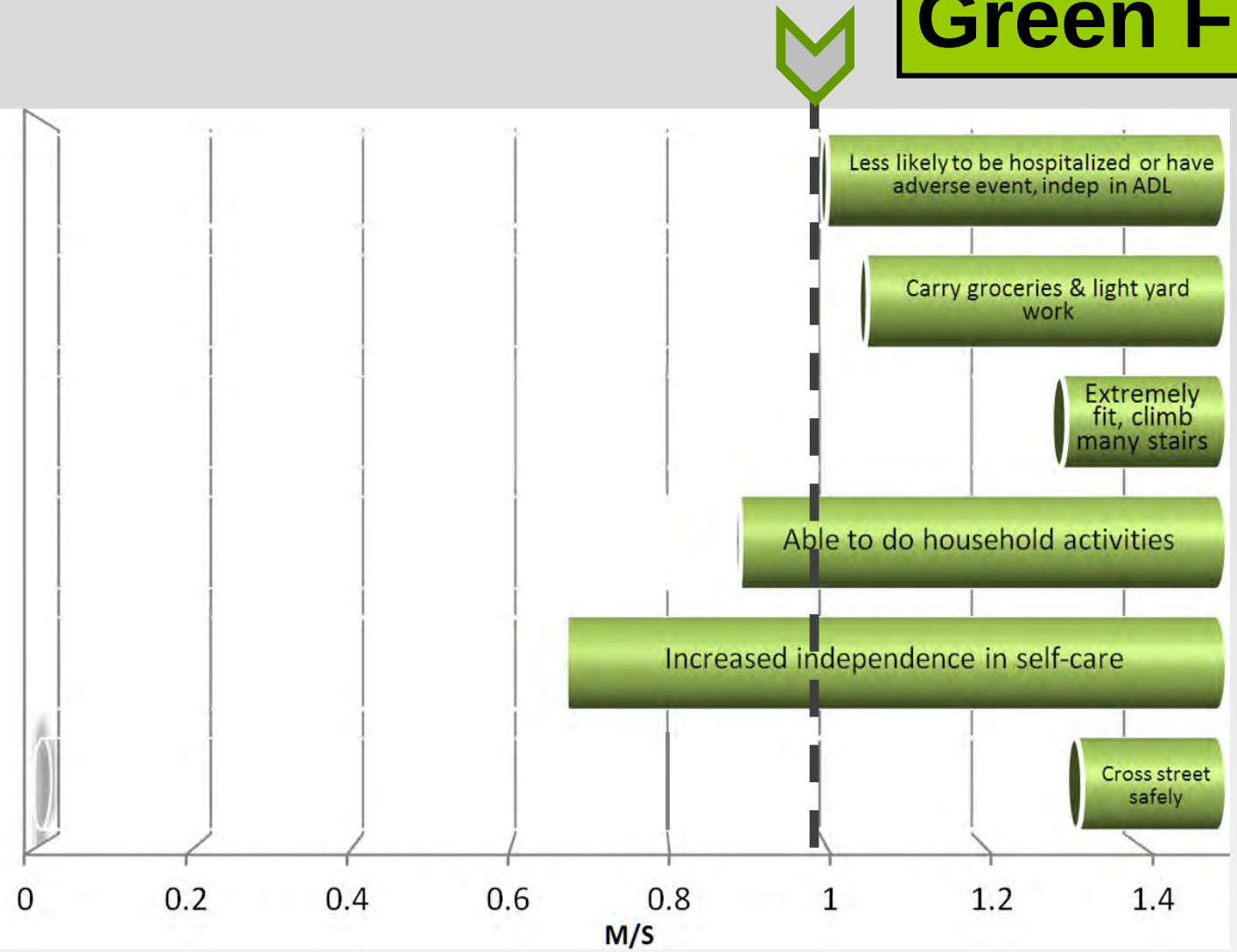
Red Flag: ≤ 0.6 m/s

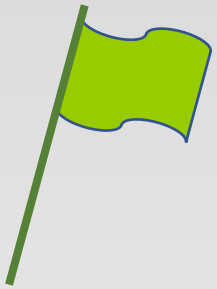


Yellow Flag: 0.6 – 1.0 m/s

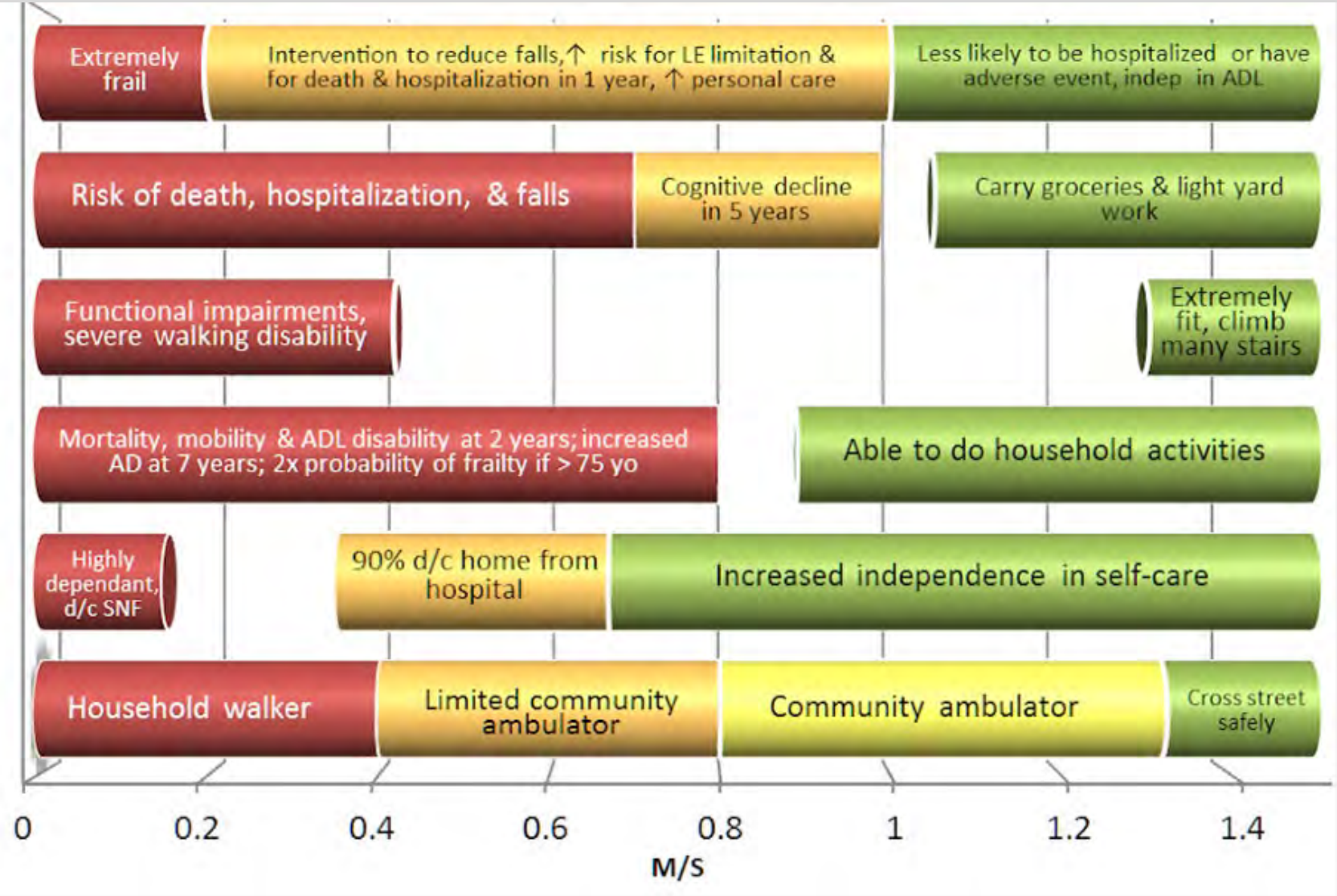


Green Flag: > 1.0 m/s

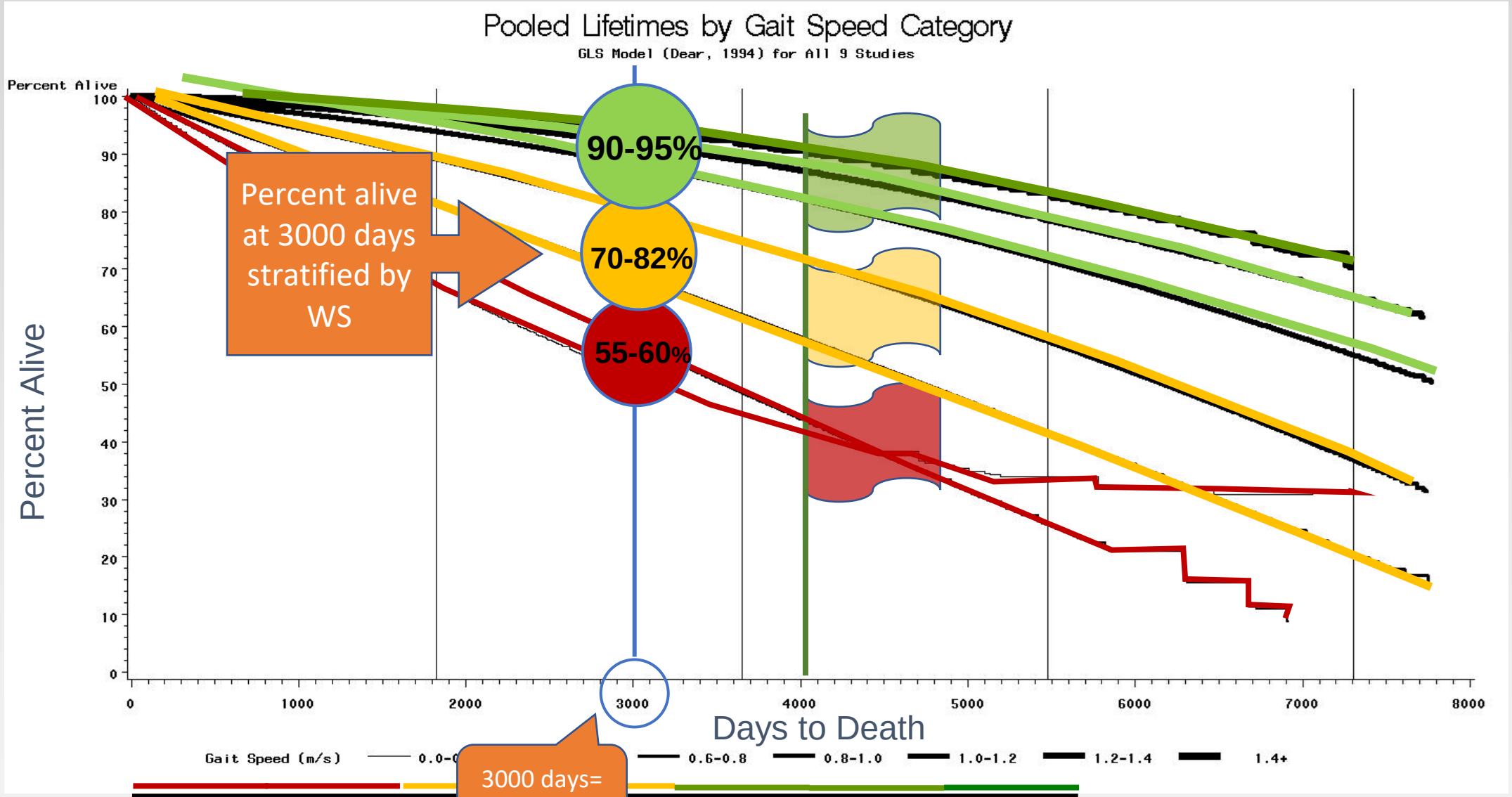


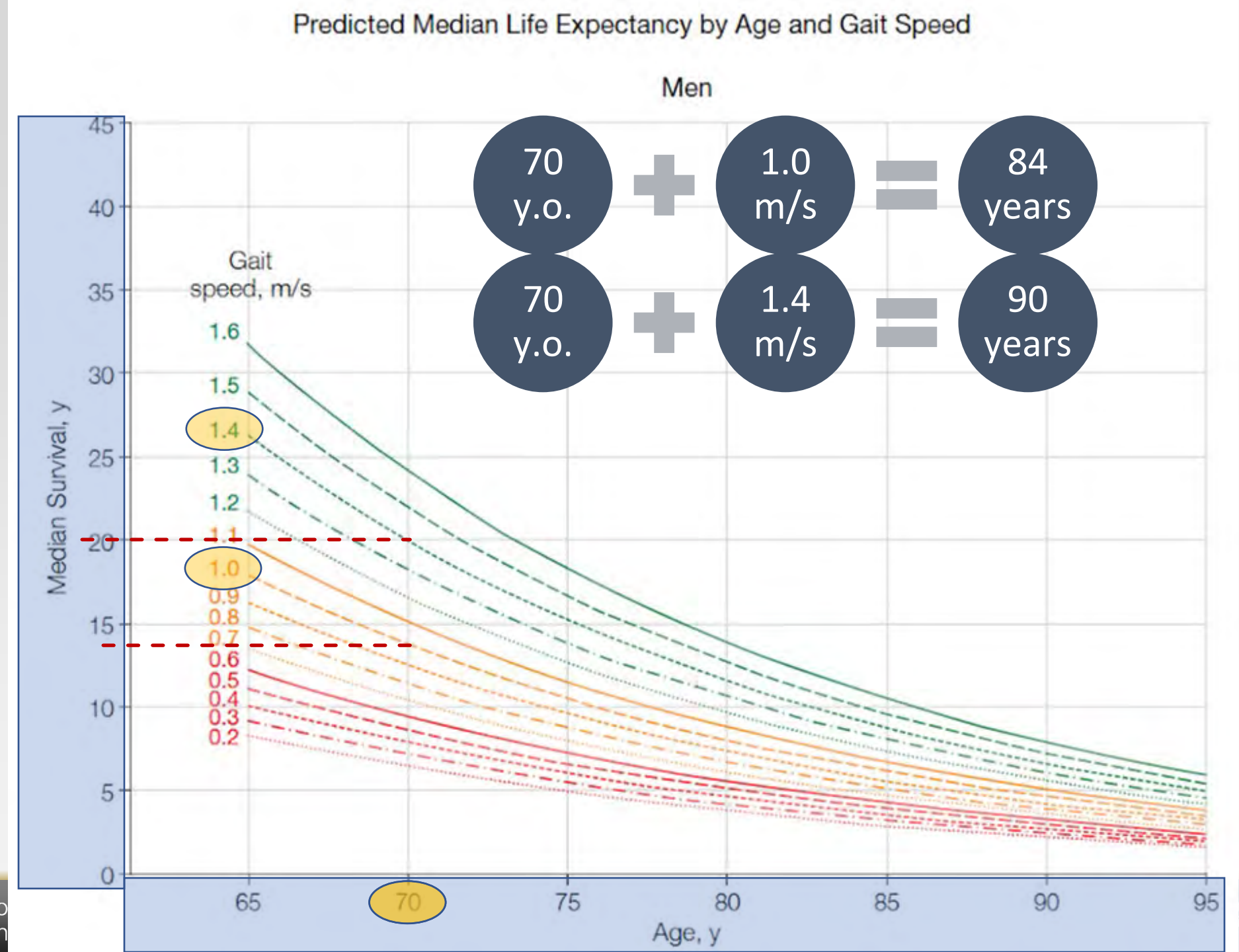


Walking Speed…Evidence across studies



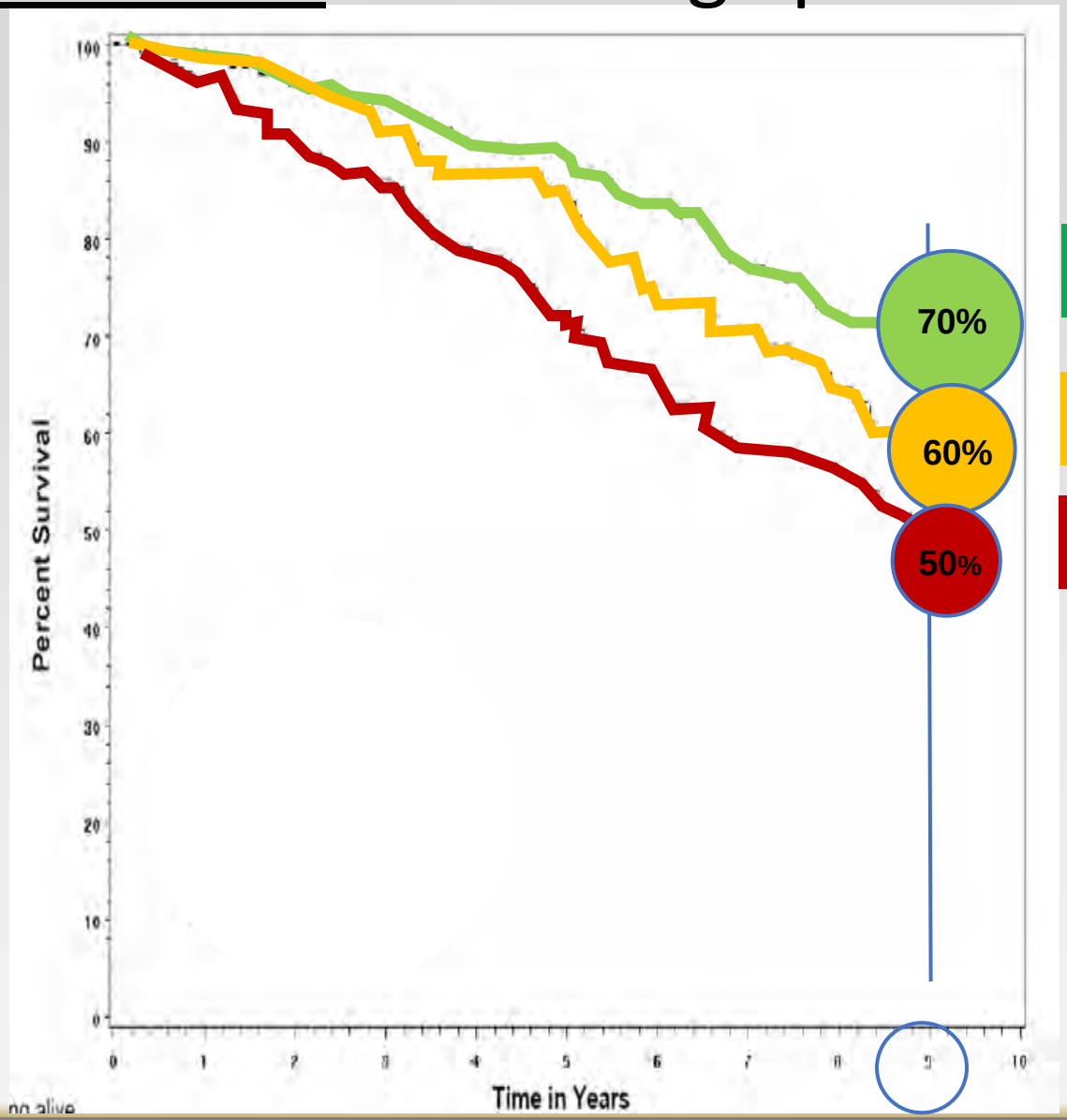
Middleton, Fritz, Lusardi JAPA 11-13


Pooled Lifetimes by Gait Speed Category
GLS Model (Dear, 1994) for All 9 Studies
Percent Alive
Percent Alive
Days to Death
90-95%
70-82%
55-60%
Percent alive at 3000 days stratified by WS
3000 days= 8.5 years
Gait Speed (m/s)
0.6-0.8
0.8-1.0
1.0-1.2
1.2-1.4
1.4+
0-.4 m/s
4-.6 m/s
1.0-1.2m/s
1.2-1.4 m/s
>1.4 m/s



Studenski et al., 2011, JAMA

Improvement in Walking Speed improves Mortality



Monitored Gait Speed Over 1 year:

Improved at 1 year by 0.1 m/s

Transient improvement

Never improved

Walking speed is a Modifiable Risk Factor

Hardy 2007

How do we improve walking speed?

Aiming for "**Failure**“ using progressive strengthening

Choosing Wisely®

An initiative of the ABIM Foundation

Don't let older adults lay in bed or only get up to a chair during their hospital stay.

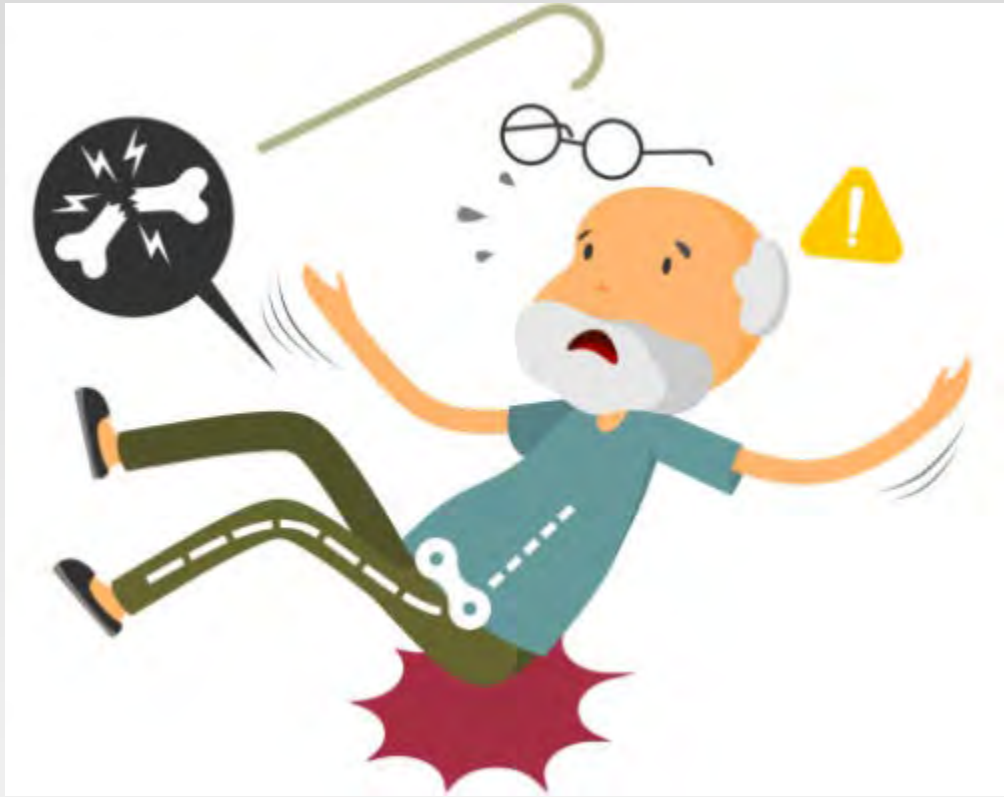
Don't prescribe under-dosed strength training programs for older adults. Instead, match the frequency, intensity and duration of exercise to the individual's abilities and goals.

Barriers for implementation of optimal practice patterns

- Fear of adverse events, penalties, or litigation

- Practice of “negative defensive medicine”

“I don’t want a fall on my shift.”

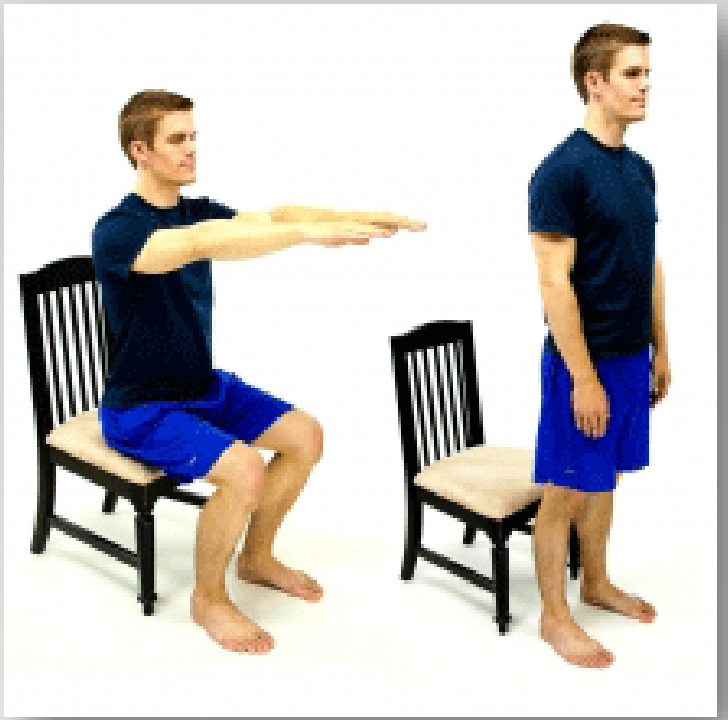


Fear of Litigation

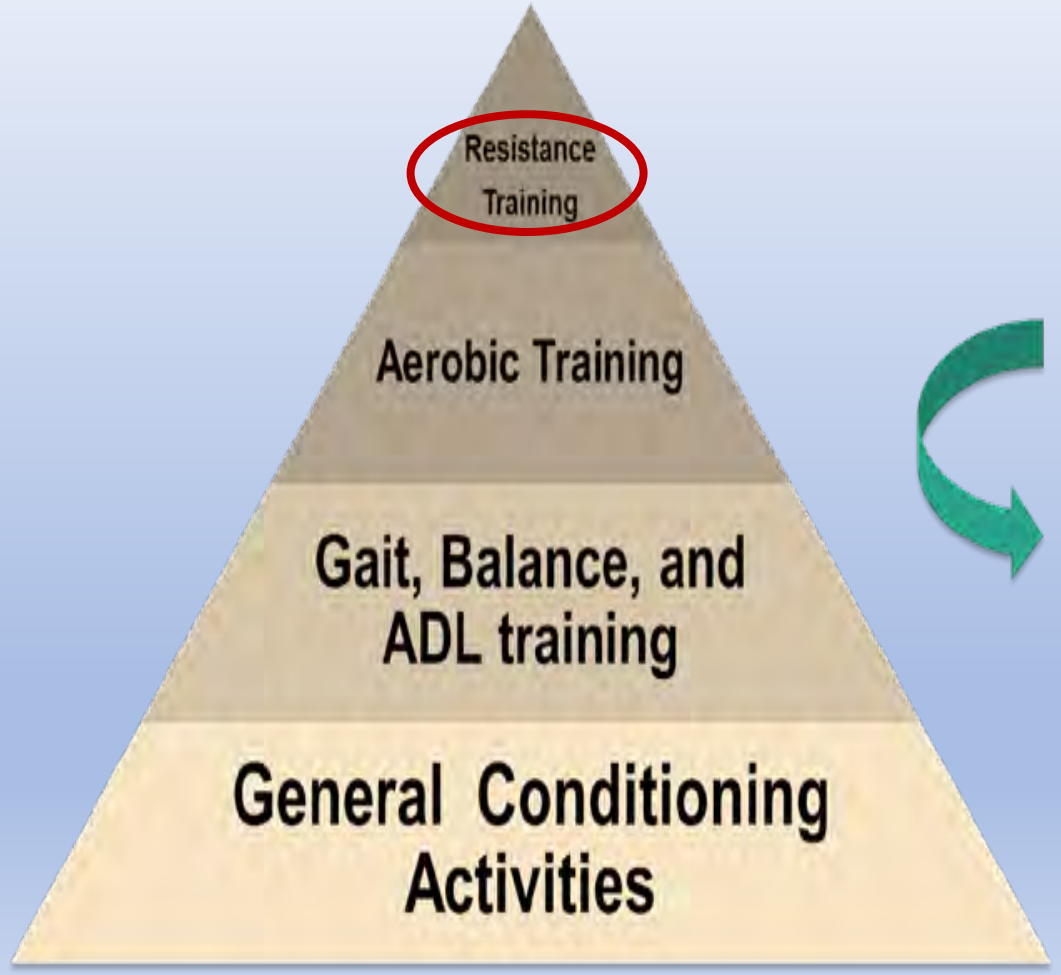
- Have we taken the “above all else…do no harm principle” to an extreme?
- Would more evidence-based guidelines help decrease litigation fear?

Do Light Weights Generate Forces Equivalent to Daily Functional Activities?

≠



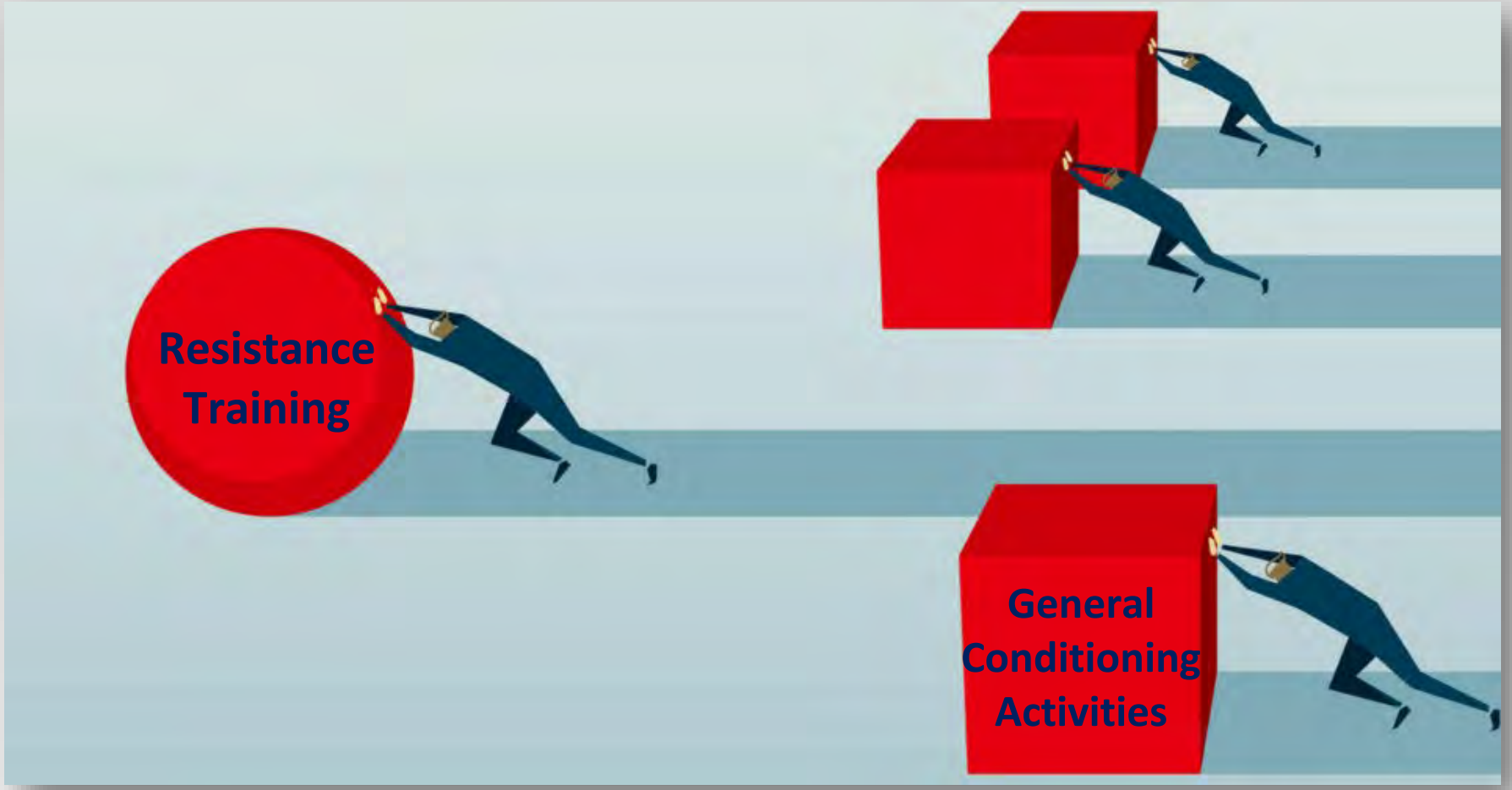
Current Rehabilitation



Progressive Rehabilitation

Low-Physiologic Intensity → **High-Physiologic Intensity**

Work Smarter, Not Harder

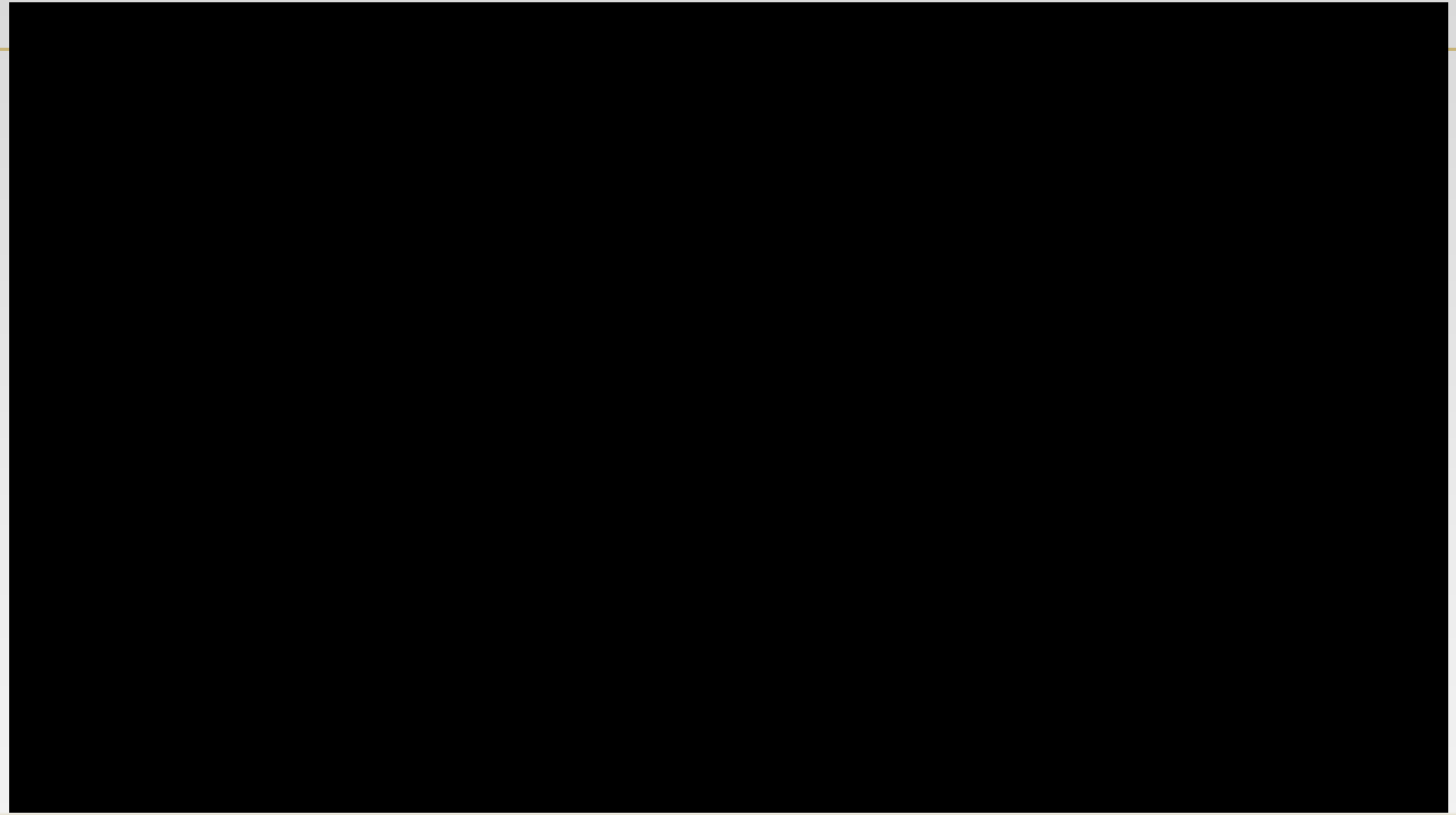


FOR MUSCLE STRENGTHING

MORE THAN 8 UP THE WEIGHT!

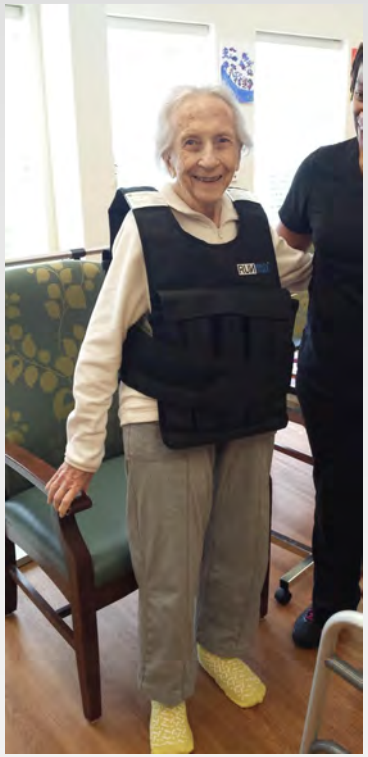
EXERCISE FORM FAILURE ON THE 9TH REPETITION IS GOOD

Video of sit to stand



RPE SCALE

1	Nothing
2	Very Easy
3	Easy
4	Comfortable
5	Somewhat Difficult
6	Difficult
7	Hard
8	Very Hard
9	Extremely Hard
10	Maximal/Exhaustion



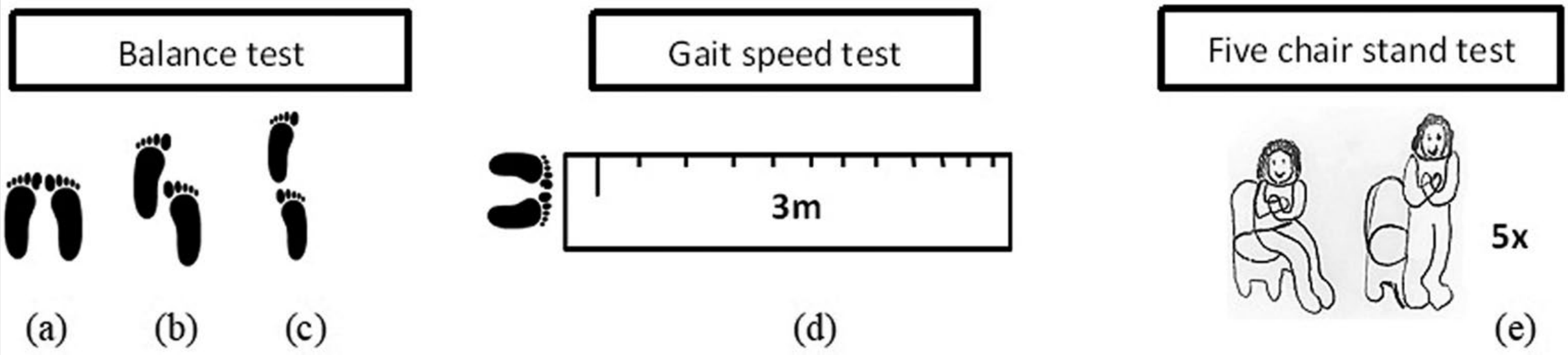
Journal of the
American Geriatrics Society

Implementation of a rehabilitation model in a Program of All-Inclusive Care for the Elderly (PACE): Preliminary data

2022

Allison M. Gustavson DPT, PhD[1,2] | Cherie V. LeDoux DPT, PhD[1] |
Michael Himawan DPT[1] | Jennifer E. Stevens-Lapsley MPT, PhD[1,3] |
Kathryn A. Nearing PhD[3,4,5]

6 weeks of high-intensity training



2x the Clinical meaningful change seen after 6 weeks

Gustavson et. al. 2022 J of American Geriatrics Society

Phys Ther. 2020 Sep 28;100(10):1746-1758. doi: 10.1093/ptj/pzaa126.

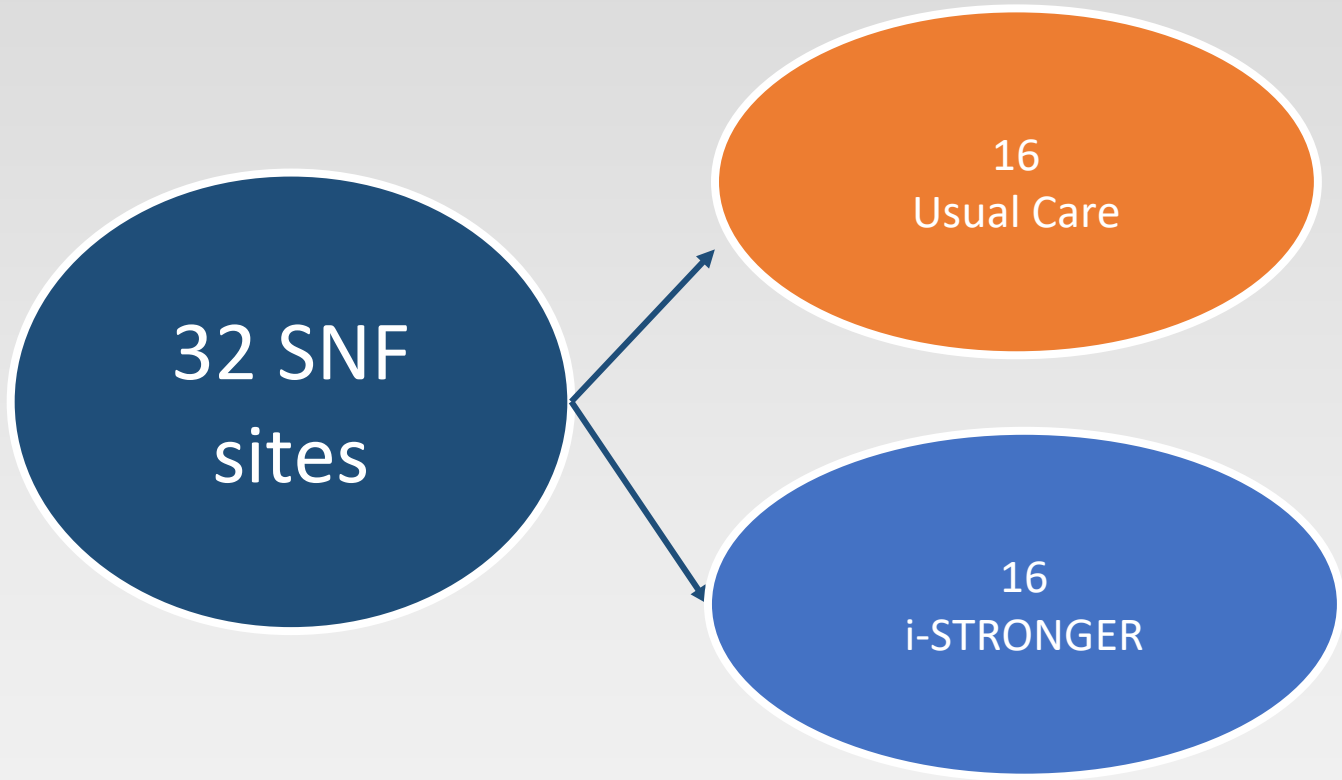
Application of High-Intensity Functional Resistance Training in a Skilled Nursing Facility: An Implementation Study

Allison M Gustavson [1], Daniel J Malone [2], Rebecca S Boxer [3], Jeri E Forster [4], Jennifer E Stevens-Lapsley [5]

High-Intensity is Feasible and Effective in the SNF

	High-Intensity vs Usual Care
Short Physical Performance Battery (SPPB)	↑0.64 points
Walking/Gait Speed	↑0.13 meters/second
Community Discharge Rate	↑20%
SNF Length of Stay Estimated Cost Savings	↓3.5 days ~$1500 per patient

Pragmatic Clinical Trial (NIH R01 AG072693)



Target: 3840 patients

High-Intensity Rehabilitation plus Mobility (HeRo)

Behavioral economics

Establish baseline

Goal selection

Gamification

Improving the Lives of Older Adults by Aiming for Failure

i-STRONGER

- **High-Intensity Rehabilitation = better lives**

- Value of measuring **gait speed & physical function**

Next steps….

- **The RESTORE team can assist** to overcome barriers to implementing high intensity rehab
  - Offer CEU educational opportunities
  - Access to an **educational platform** with a robust follow-up and ongoing support

www.movement4everyone.org

- APTA: Certified Exercise Expert for Aging Adults **(CEEAA)**

VA RR&D I21 RX002193

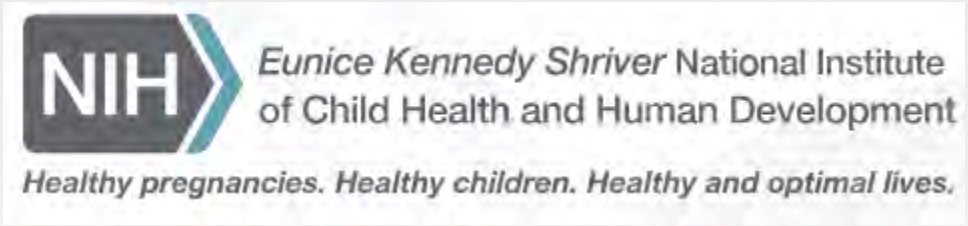
VA RR&D I01 RX001978

NIH R01 NR016209

NIH R01 AG054366

Foundation for Physical Therapy

CoHSTAR



Rehabilitation Research & Development Service (RR&D)

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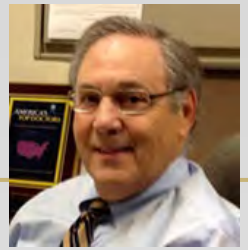
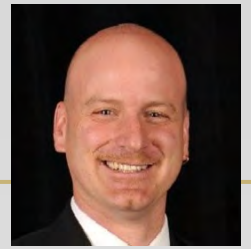


Bob Schwartz, MD



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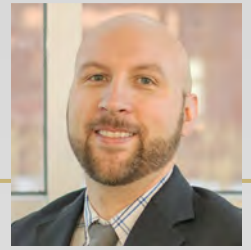

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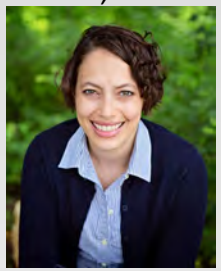

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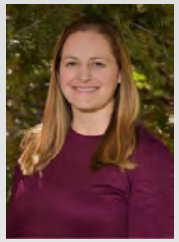

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