

The logo consists of the letters 'FAI' in a bold, white, sans-serif font, centered within a red shield-shaped background.

FAI

The background of the slide is a dark, semi-transparent photograph of a group of people, mostly older adults, riding bicycles. They are smiling and appear to be in a group setting, possibly a community ride or a training session. The image is slightly blurred, giving it a sense of motion.

Functional Aging Training Model



Cody Sipe, PhD

20 years industry experience

Over 100 presentations internationally

Over 30 published articles

2005 IDEA Program Director of the Year

Advisory Boards for National Posture Institute, International Council on Active Aging, Act!vate Brain and Body, ACSM, CFES, WCAA

Editorial Boards: IDEA, Faith and Fitness Magazine, Boomerbloomer.com

FAI

Dan Ritchie, PhD, CSCS

16+ years experience – personal trainer,
manager, owner

Certified Strength and Conditioning
Specialist

FallProof Balance and Mobility
Enhancement Specialist

Enhance Fitness Master Trainer

2014 PFP Personal Trainer of the Year

Act!vate Brain and Body Advisory Board



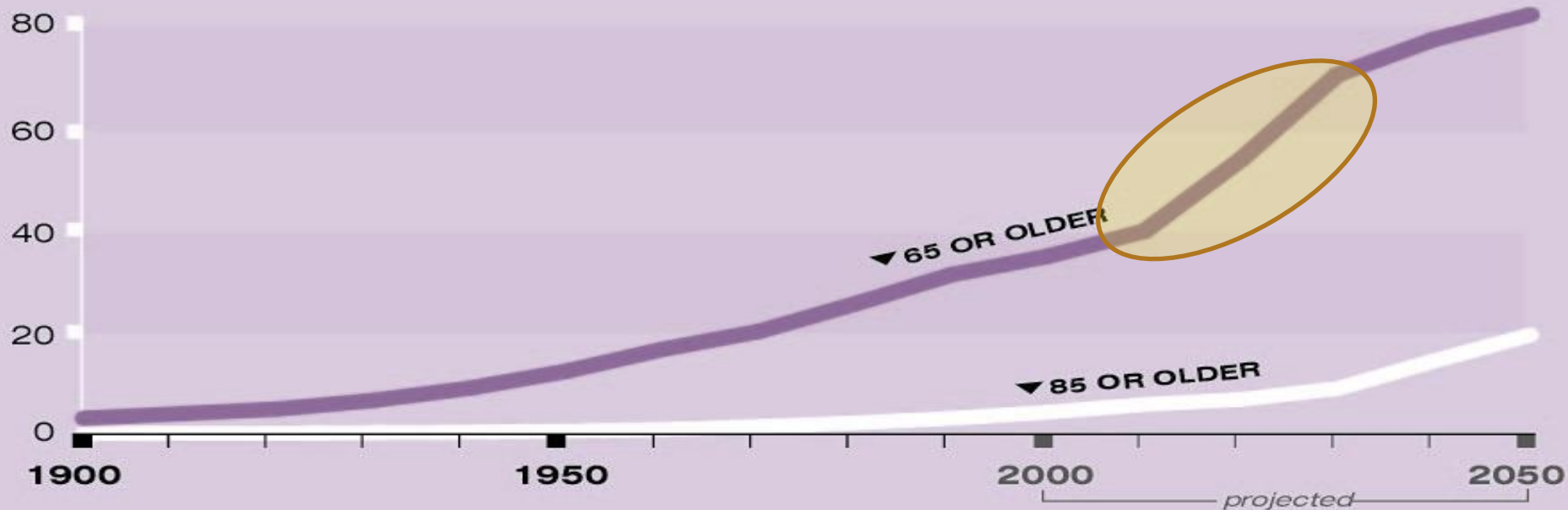
FAI

FAI International Advisory Board



Huge Growth means Huge Potential

Total number of persons age 65 or older, by age group, 1900 to 2050, in millions



Note: Data for the years 2000 to 2050 are middle-series projections of the population.

Reference population: These data refer to the resident population.

Source: U.S. Census Bureau, Decennial Census Data and Population Projections.

The Mature Market by the Numbers

1946-1964

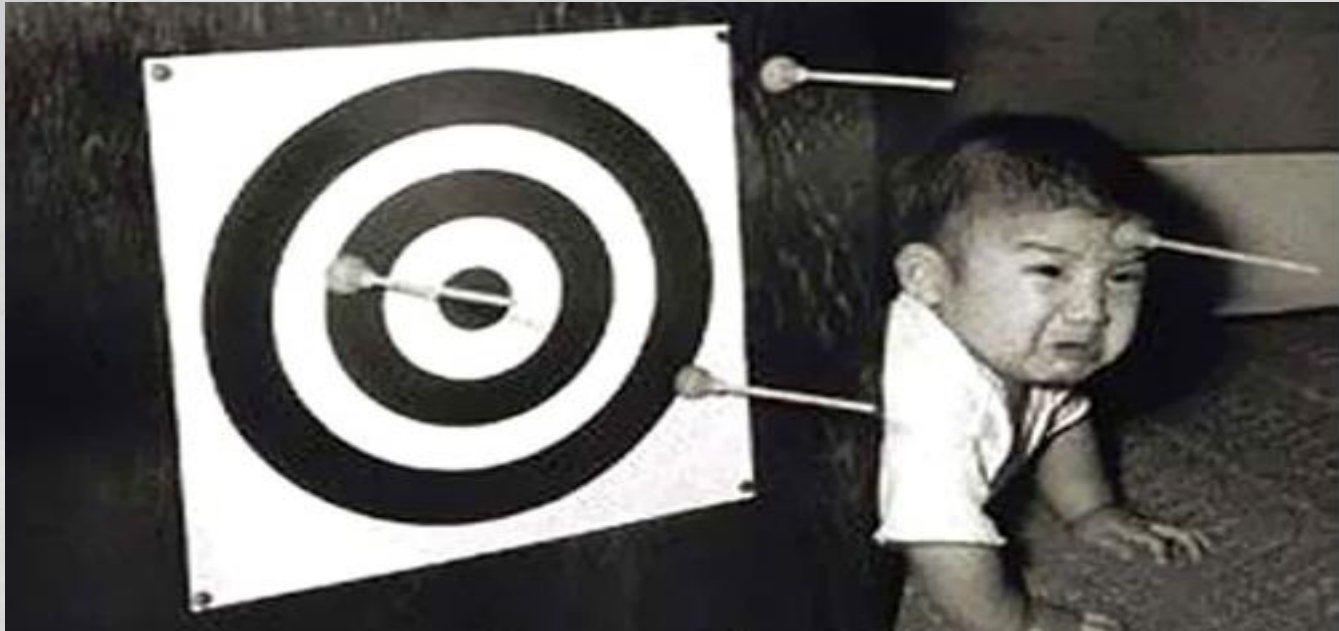
Currently Age 50-68

79,000,000+

Every 7 seconds

FAI

We've Missed the Mark

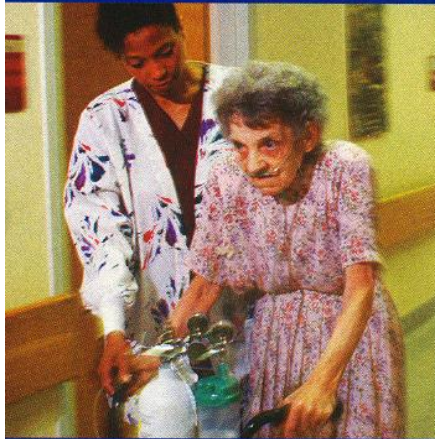




FAI

WHAT FUELS MY PASSION?

THESE TWO WOMEN ARE
APPROXIMATELY THE SAME AGE.

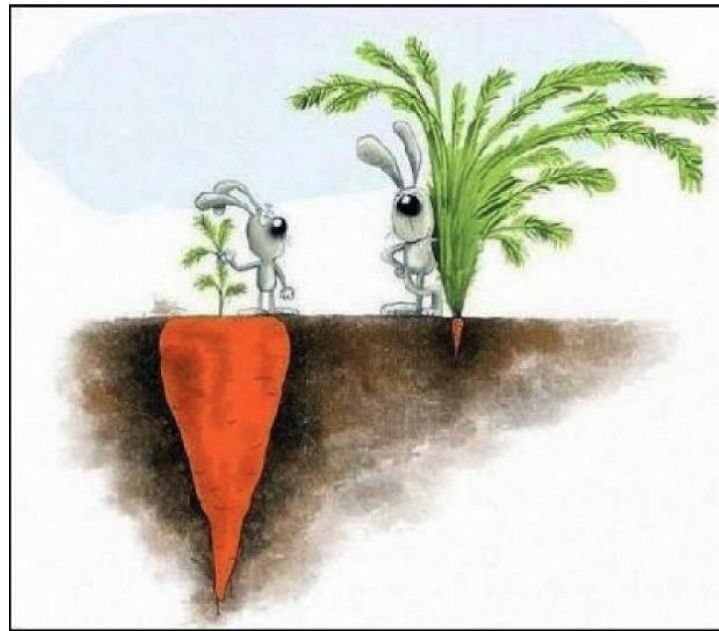


Which life are you designing?

Which would you choose?

Quality

Quantity



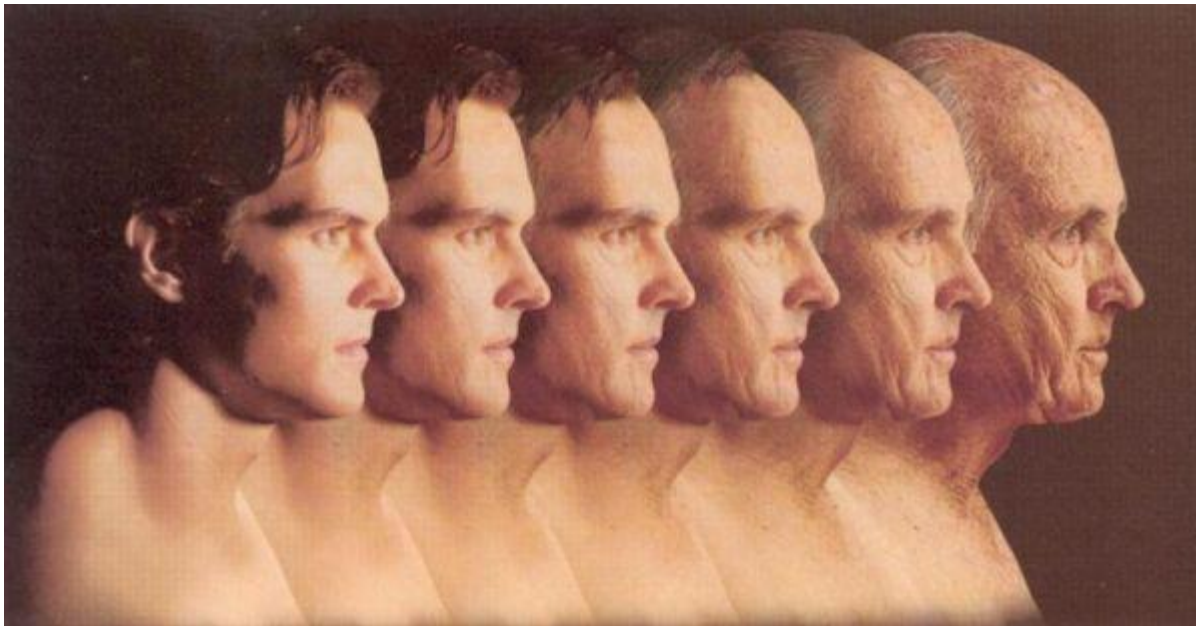
Functional Longevity

Maintaining your ability to do what you *need* to do, what you *want* to do and what you *like* to do as late in life as possible.



Genetics and Aging

- Account for 25% of aging



Primary vs. Secondary Aging



Which type of exercise is best?

Walking



Strength Training



Walking



- Sufficient for older adults
- Easy
- Convenient
- No equipment necessary
- Limiting

Strength Training

- Safe
- Traditional weight lifting
 - Improved strength and muscle mass
 - Strength gain may not translate to functional ability



Both Are Limited

Walking



Strength Training



The Research Says...

Have we oversold the benefits of late-life exercise? (2001)

Critical review of 31 studies

- Impairment – Strength, ROM, Aerobic capacity, body comp
- Function – Walking, chair rise, balance
- Disability – Physical, social, emotional, overall

Results

- Impairment: Very Strong
- Function: Strong but inconsistent
- Disability: Weak and inconclusive

Systematic review of PRT in older adults (2004)

Pooled data from 62 trials

- Randomized controlled trials
- PRT with subjects aged 60+

Results

- Large positive effect on muscular strength
- Small to moderate effect on functional ability
 - Strength gains do not equate to similar functional gains
- No evidence of an effect was found for physical disability

Multi-modal exercise programs for older adults – a systematic review (2007)

- 15 studies that concurrently used PRT, cardio and balance training
- Subjects aged 60+
- Conclusion:
 - Positive effect on falls prevention
 - Small effect on physical, functional* and quality of life outcomes

* - habitual gait, maximal gait, chair stand

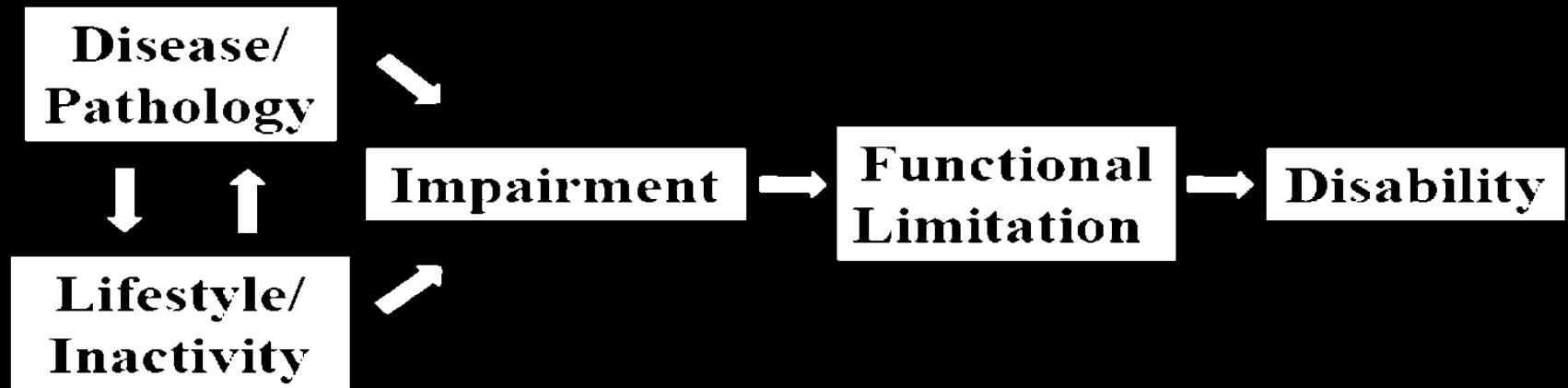
Exercise: necessary but not sufficient for improving function and preventing disability? (2011)

Key Points:

- There is consistent and convincing evidence that older adults and adults with knee OA who engage in strength training or aerobic exercise are able to decrease pain and increase strength and physical function
- The effects on strength, pain and function, though, are modest, at best
- It is not clear that exercise interventions alone will minimize or prevent disability
- Exercise may be necessary but not sufficient in minimizing or preventing disability. **Effective interventions for minimizing disability are scarce and novel approaches are needed**

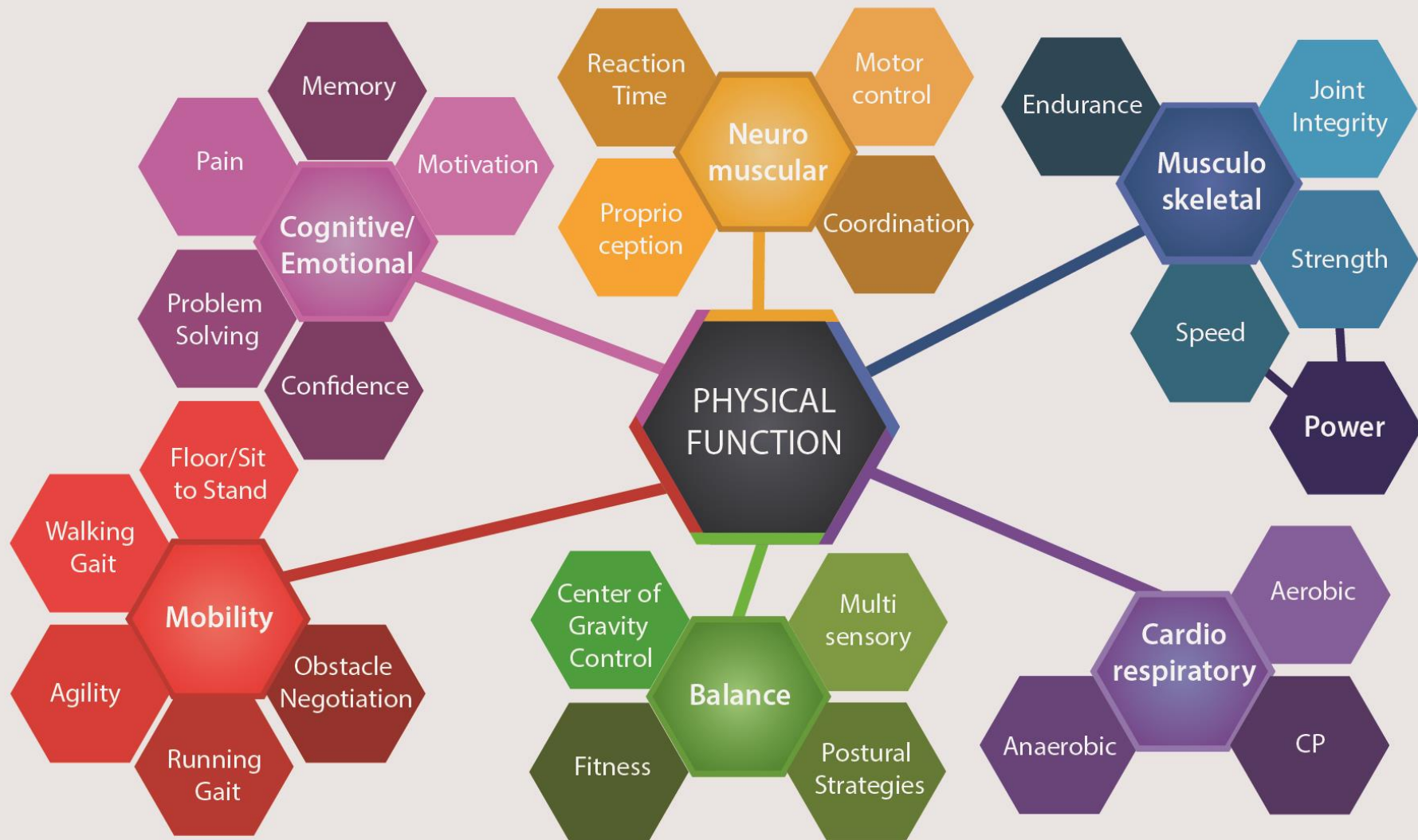
The Nagi Model

Revised, Rikli and Jones, 1997



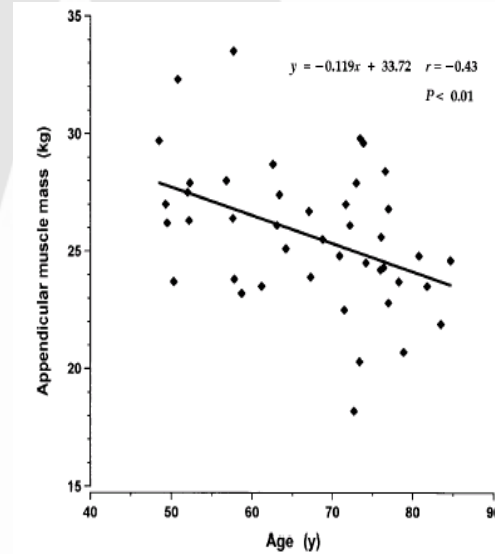
What Impairment Level Factors are Vital for Function?

- Muscular Strength
 - Concentric
 - Eccentric
 - Isometric
- Contractile Velocity
 - Acceleration
 - Deceleration
- Muscular Power
- Muscular Endurance
- Aerobic Power
- Flexibility
- Joint Range of Motion
- Coordination
- Reaction Time
- Motor Control
- Proprioception
- Somatosensation
- Vestibular control
- Vision
- Mobility
- Agility
- Balance
- Stability
- Gait
- Postural Control





Sarcopenia = age related decline in muscle mass



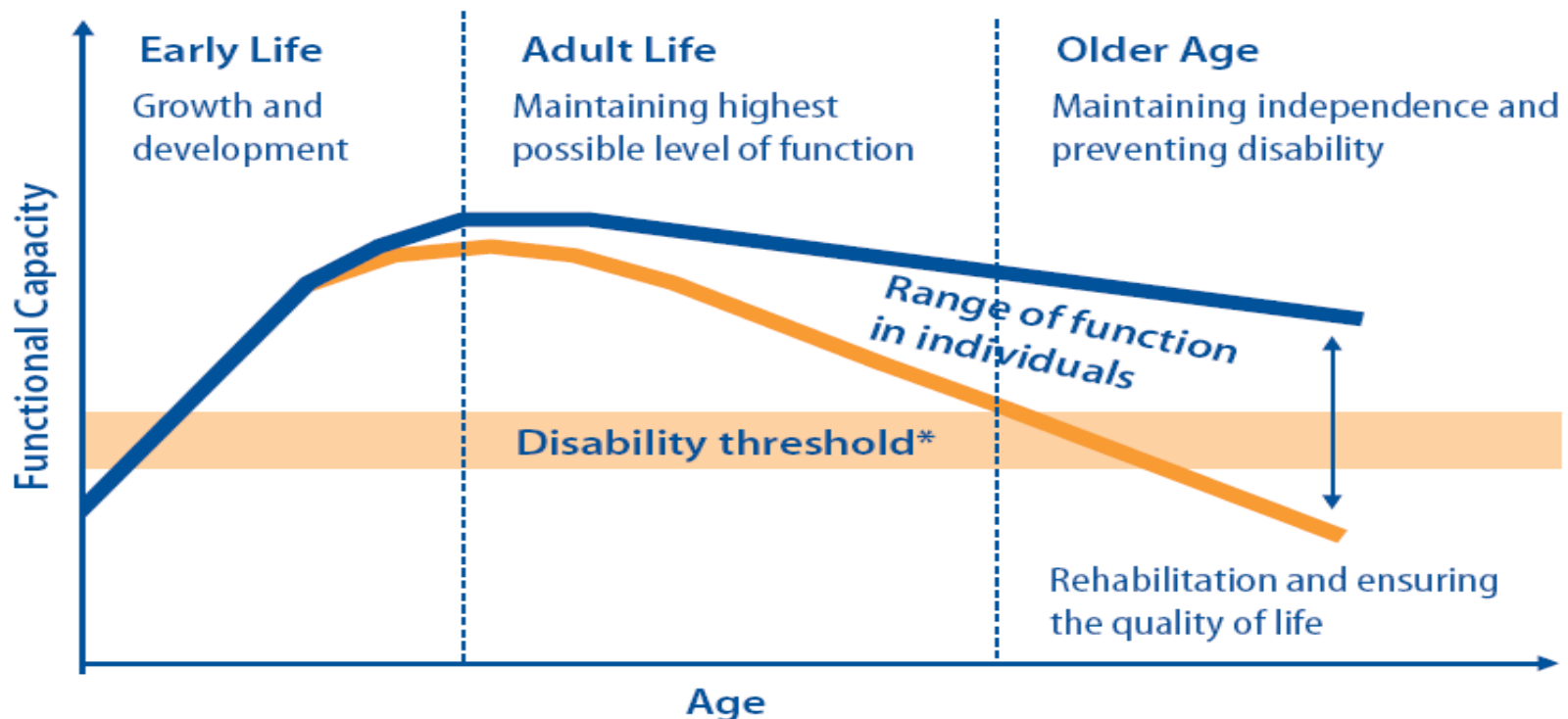
Starling et al. *Am J Clin Nutr* 1999

www.sarcopenia.com

Muscle strength declines 30% (on average) from age 50-70,
more dramatic losses after age 80
Large degree of variability between individuals

Huge variability in impairments means huge variability in functional abilities

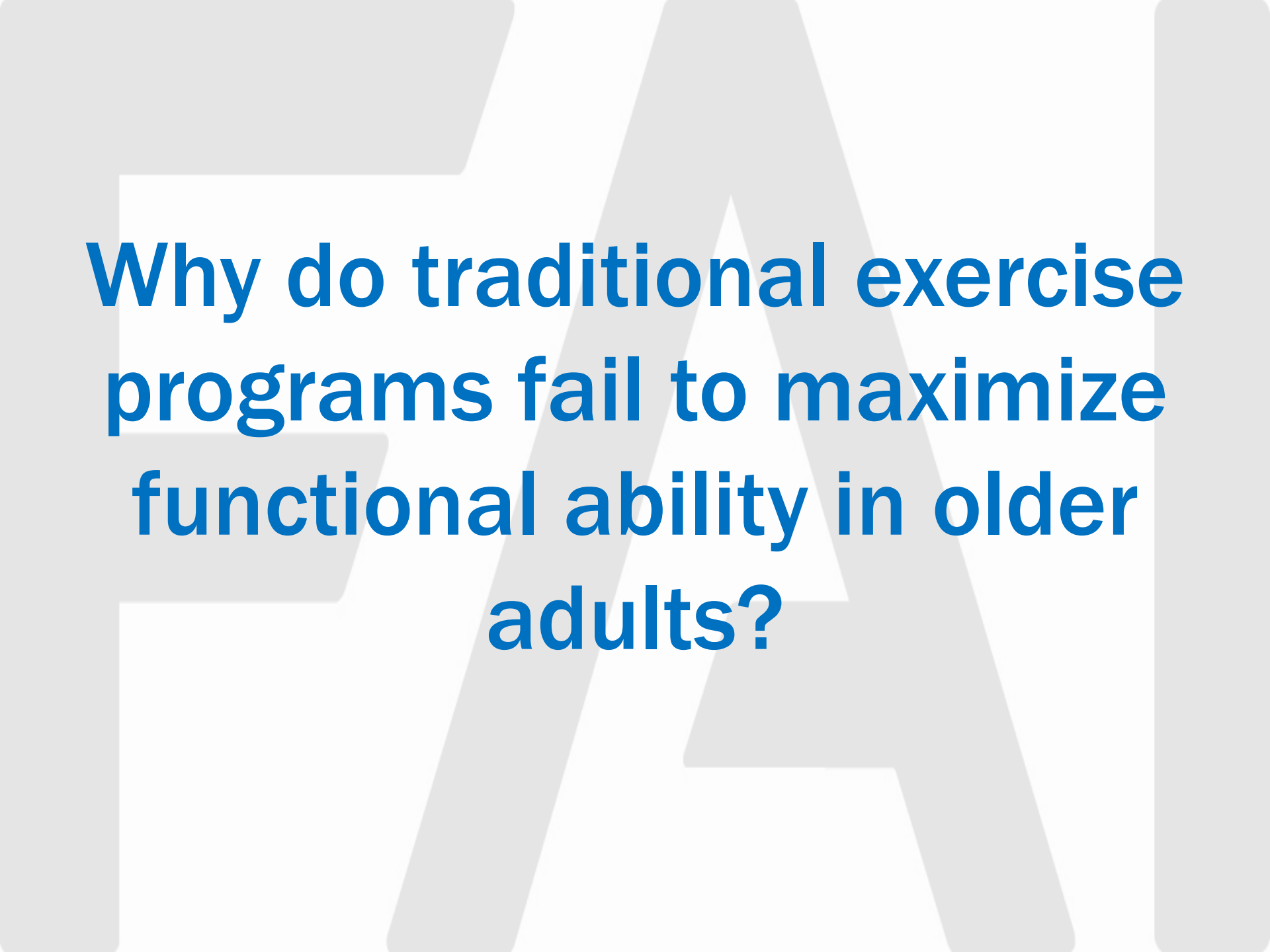
Figure 4. Maintaining functional capacity over the life course



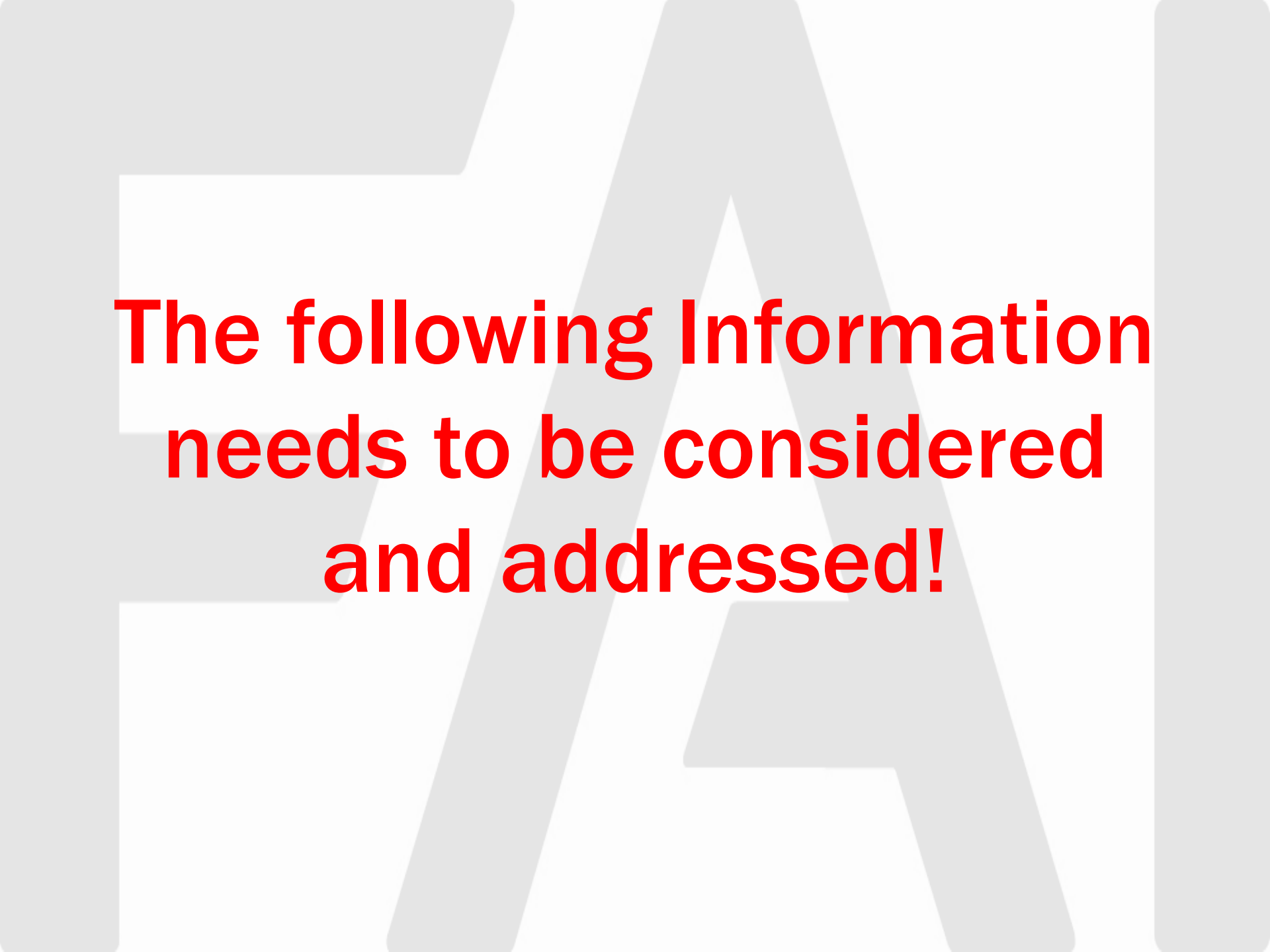
Source: Kalache and Kickbusch, 1997

Hierarchy of Physical Function





Why do traditional exercise programs fail to maximize functional ability in older adults?



**The following Information
needs to be considered
and addressed!**

4 Cornerstones

1. An in-depth **UNDERSTANDING** of the aging process and its implications for exercise
2. A **RECOGNITION** of the desires, goals and aspirations that accompany the third age
3. A strong **BELIEF** that people can be fit, healthy, vibrant and functional at any age
4. An **APPROACH** to exercise that is grounded in evidence and honed with experience.

2 Pillars

Specificity

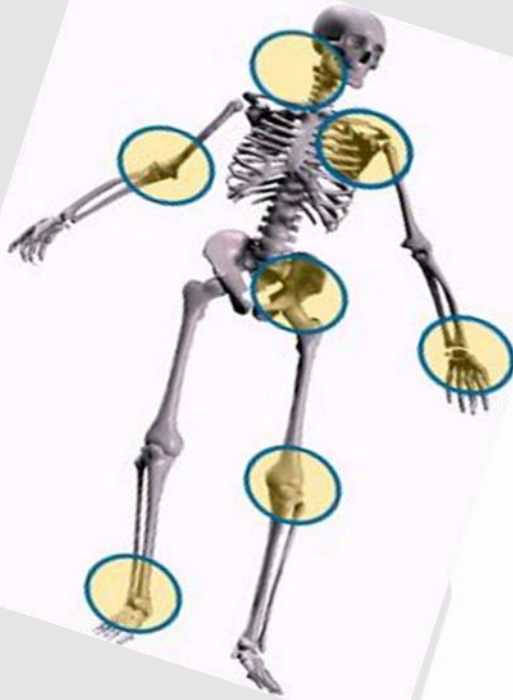
- SAID
- How you train is how you gain
- Correlation of the exercise to the functional goal

Progressive Overload

- Body adapts to overload (at any age)
- Overload must be progressed in order to stimulate further improvement

7 Key Principles

1. Assess, prioritize and train ALL components of function
2. Make purposeful decisions for every aspect of training
3. Integrate movement patterns (train in all 3 planes) to prepare for functional demands
4. Include isolation-type exercise movements as supplementary and complementary rather than the primary component of the routine
5. Perform exercise movements in a seated position only when absolutely necessary or when it serves a specific purpose
6. Order the session according to energy level with more complicated, multi-component movements occurring earlier and less complicated, isolation-type movements occurring later
7. Maximize client safety and success by taking a holistic approach to training



Is the Exercise Safe and Effective?

1. Purpose?
2. Does it Fulfill the Purpose?
3. Stress Points?
4. Risk Benefit Ratio?
5. Specificity and Appropriateness?



Thanks

