

Attachment 1 — IDEAL Recruitment Presentations

The diverse interests and understandings of the audiences to whom IDEAL study staff present as well as operational changes have required some changes and additions to the information provided in the recruitment presentation. These power point presentations are identified herein as Attachment 1a (General Presentation) and Attachment 1b (Scientific Presentation). Attachment 1a has undergone minor revisions, whereas Attachment 1b constitutes the addition of scientifically focused slides to the recruitment presentation.

The changes to Attachment 1a are as follows:

1. Modifications of the content due to operational changes
 - a. Under Eligibility criteria no longer excludes participation for those using “hyperlipidemia” medications.
 - b. **MedStar** has been added to the title of the hospital, now known as MedStar Harbor Hospital
 - c. All reference to Home Visit for Physical Screening has been removed as all screening is conducted at MedStar Harbor Hospital for the IDEAL cohort.
 - d. An update to the role that Dr. Ferrucci now holds was added — Luigi Ferrucci, M.D., Ph.D, Scientific Director of NIA, Principal Investigator, NIA, NIH
2. Addition of content to present scientific observations
 - a. In addition to the slides which provide a general overview of the study and its purpose a series of slides which depict specific methods and examples of observations occurring during the testing and what this information is indicative of have been added. This information was previously limited to those who qualified for the physical exam.



Insight into the
Determinants of
Exceptional
Aging and
Longevity



The average age of our population is increasing at unprecedented rates. The current life expectancy for Americans is around 77.9 years. Improved medical care and prevention efforts mean that for the first time in history, older people have an opportunity to avoid major chronic diseases and remain healthy, active, and productive. But more research is needed to understand healthy aging.



- ❖ The IDEAL Study is sponsored by the National Institute on Aging (NIA) part of the National Institutes of Health (NIH)



Purpose:

- ❖ Identify biological, physiological, and behavioral factors that distinguish “exceptional” agers from others their age.
- ❖ Understanding what differentiates “exceptional” agers from others their age may provide clues to how to preserve physical and cognitive function in late life and prevent disease and disability.



Study population:

- ❖ People age 80 and older
- ❖ Living within 150 miles of Baltimore-Washington
- ❖ Meet the eligibility criteria



Eligibility criteria:

- ❖ Can perform normal activities of daily living without any help
- ❖ Can walk a quarter mile without pain or shortness of breath
- ❖ Have no severe memory or cognitive issues



Eligibility criteria (cont'd.)


Have no major medical conditions, including no history of:

- ❖ Cardiovascular disease
- ❖ Diabetes
- ❖ Active cancer
- ❖ Neurological or brain diseases



Eligibility criteria (cont'd)

Have no major medical conditions, including no history of:

- ❖ Any medical condition that requires chronic drug treatment except drugs for hypertension and hyperlipidemia 
- ❖ Severe gastrointestinal or stomach diseases
- ❖ Significant vision and hearing problems




Stage one of screening:

- ❖ 10 minute phone interview
- ❖ Questions to assess major diseases and disability status



Stage two of screening

- ❖ Informed consent
- ❖ Confirm eligibility
- ❖ Assessment of physical and cognitive function at
 MedStar Harbor Hospital in Baltimore
- ❖ Obtain a blood sample for eligibility criteria





Enrollment in BLSA

- ❖ Baseline assessment
- ❖ Yearly follow-up visits



“Our aim is to learn the secrets of exceptionally healthy old age. What we find may one day help reduce the burden and suffering of others.”

Luigi Ferrucci, M.D., Ph.D., Scientific Director of NIA,
Principal Investigator, NIA, NIH





The **IDEAL** Study

In Search of the Secret
to Healthy Aging



ideal

Insight into Determinants of
Exceptional Aging and Longevity

Luigi Ferrucci, MD, PhD
National Institute on Aging
Baltimore, MD

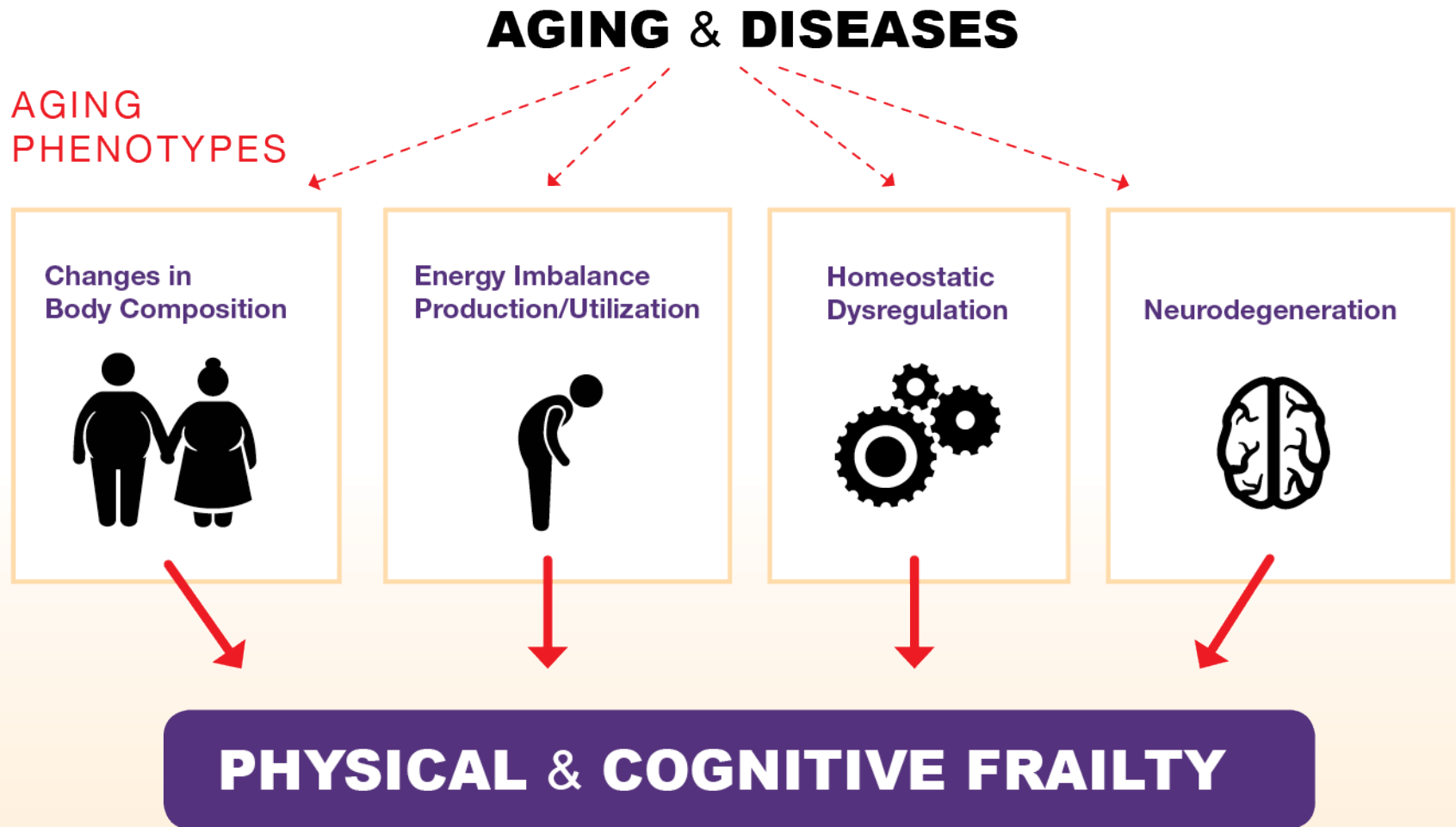
Aging and Trajectory of Function





How old is she?

The Process of Aging and Diseases

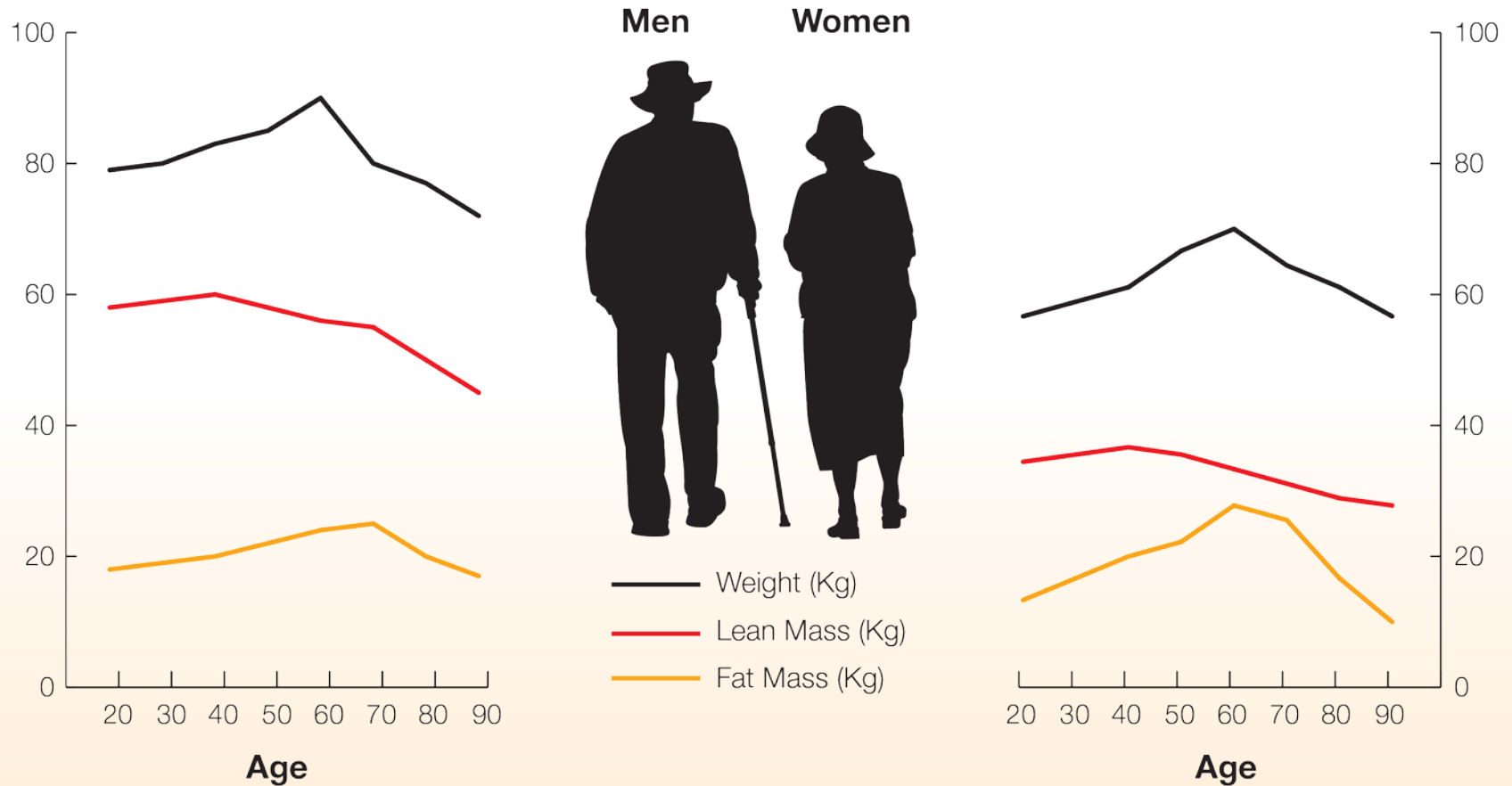




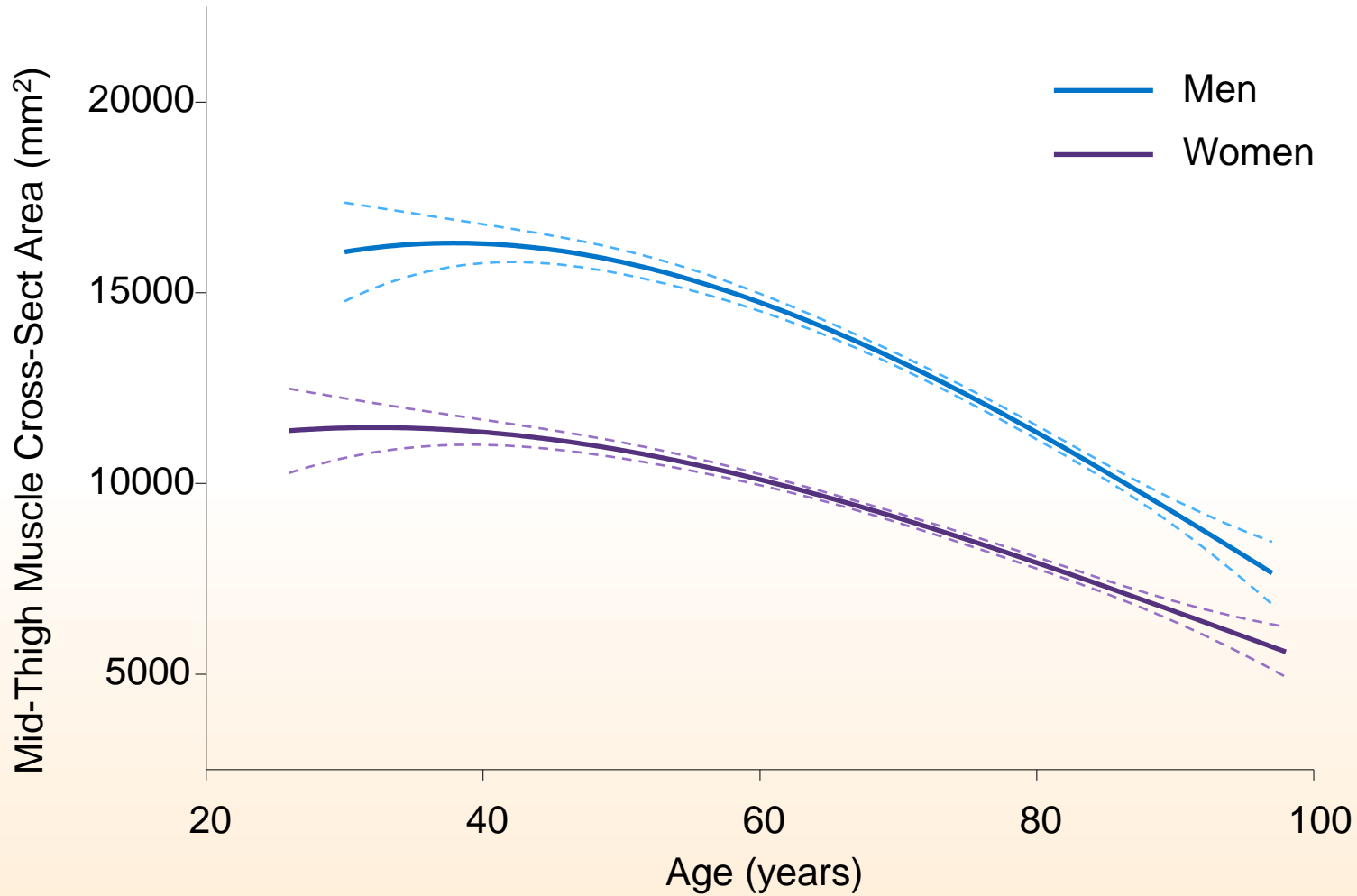
Changes in Body Composition



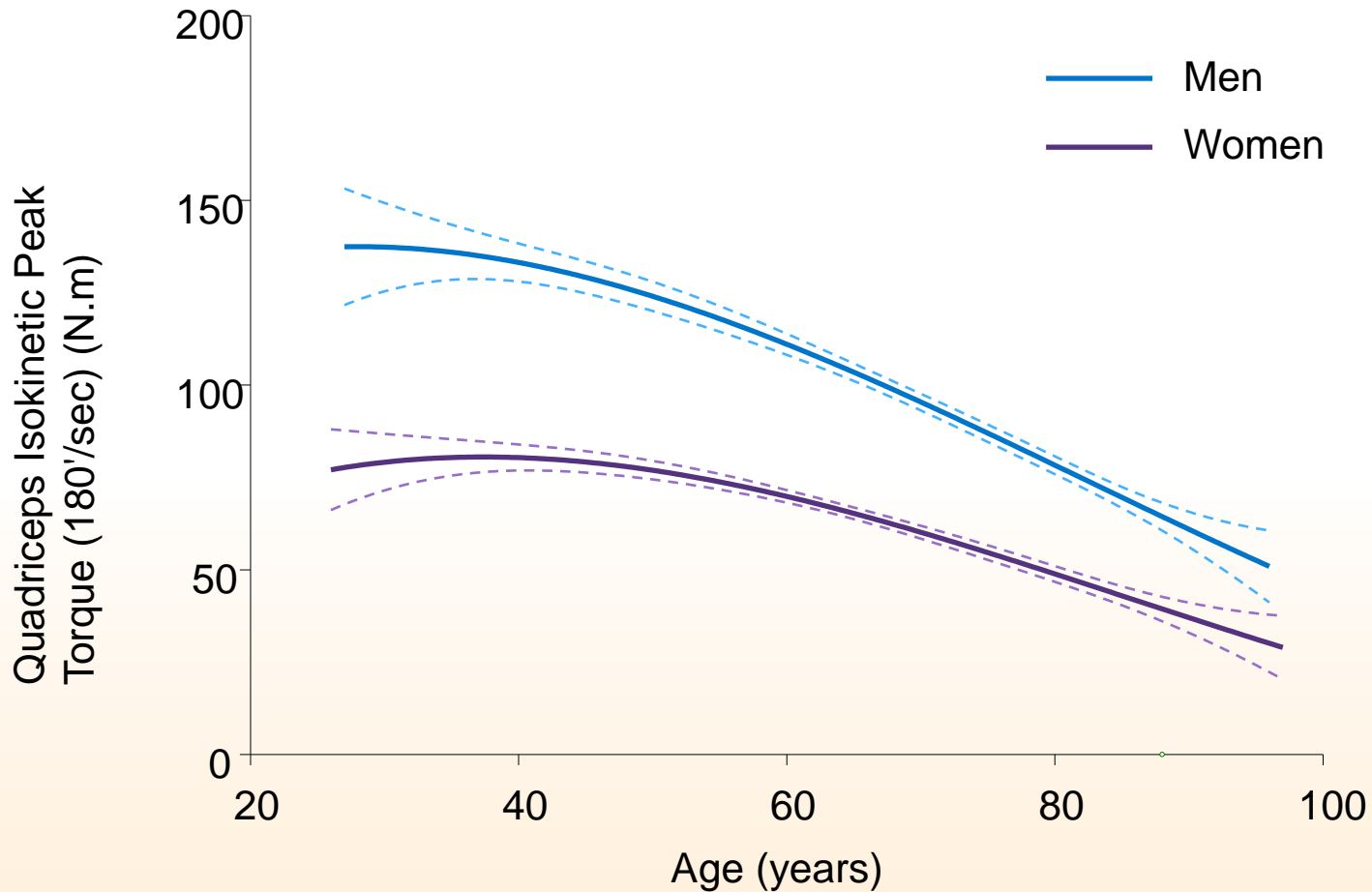
Weight, Muscle and Fat Longitudinal Changes in Body Composition with Age



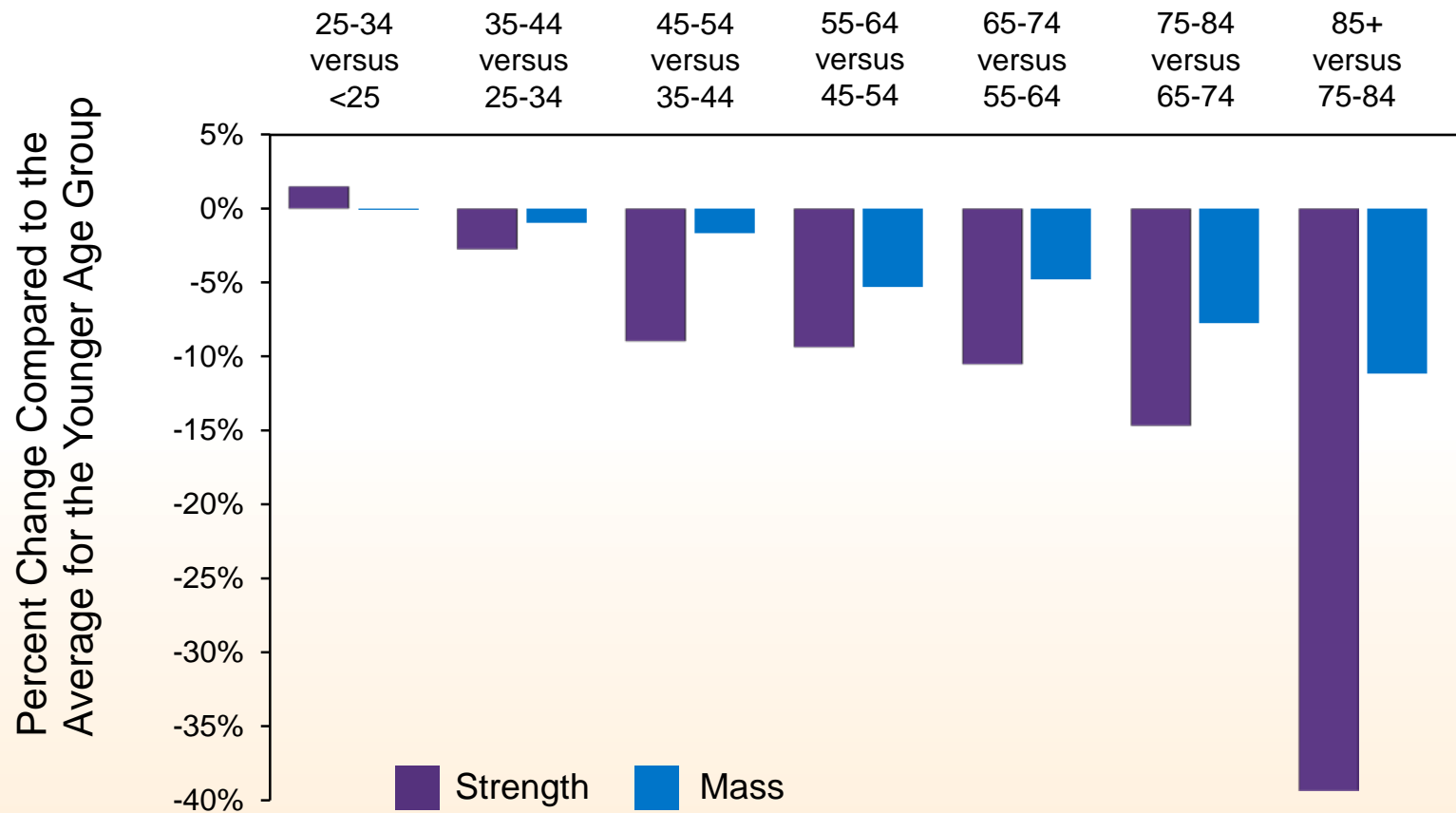
Differences in Muscle Mass by Age



Decrease in Muscle Strength by Age

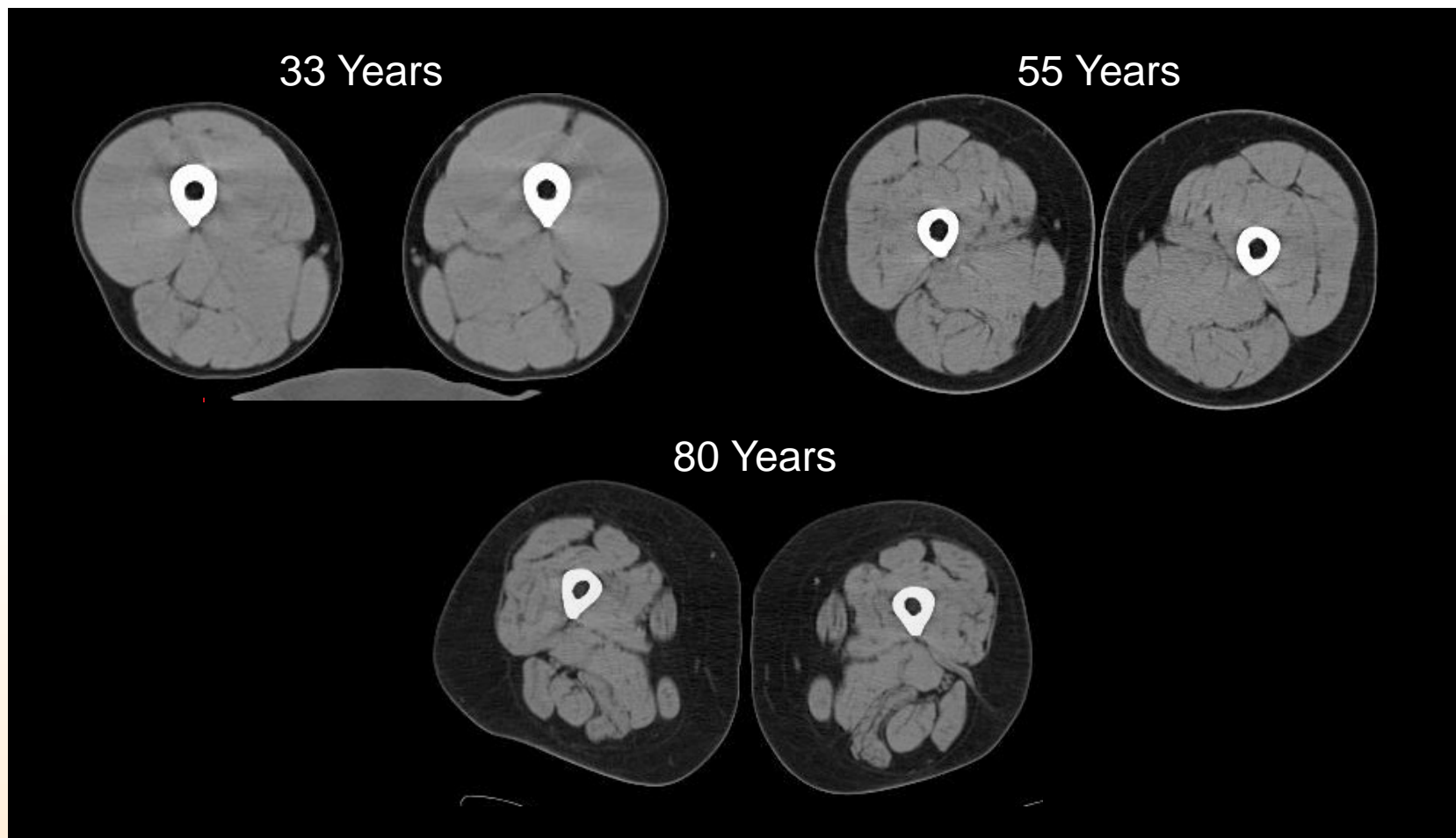


Both Muscle Mass and Muscle Strength Decrease with Age



Muscle

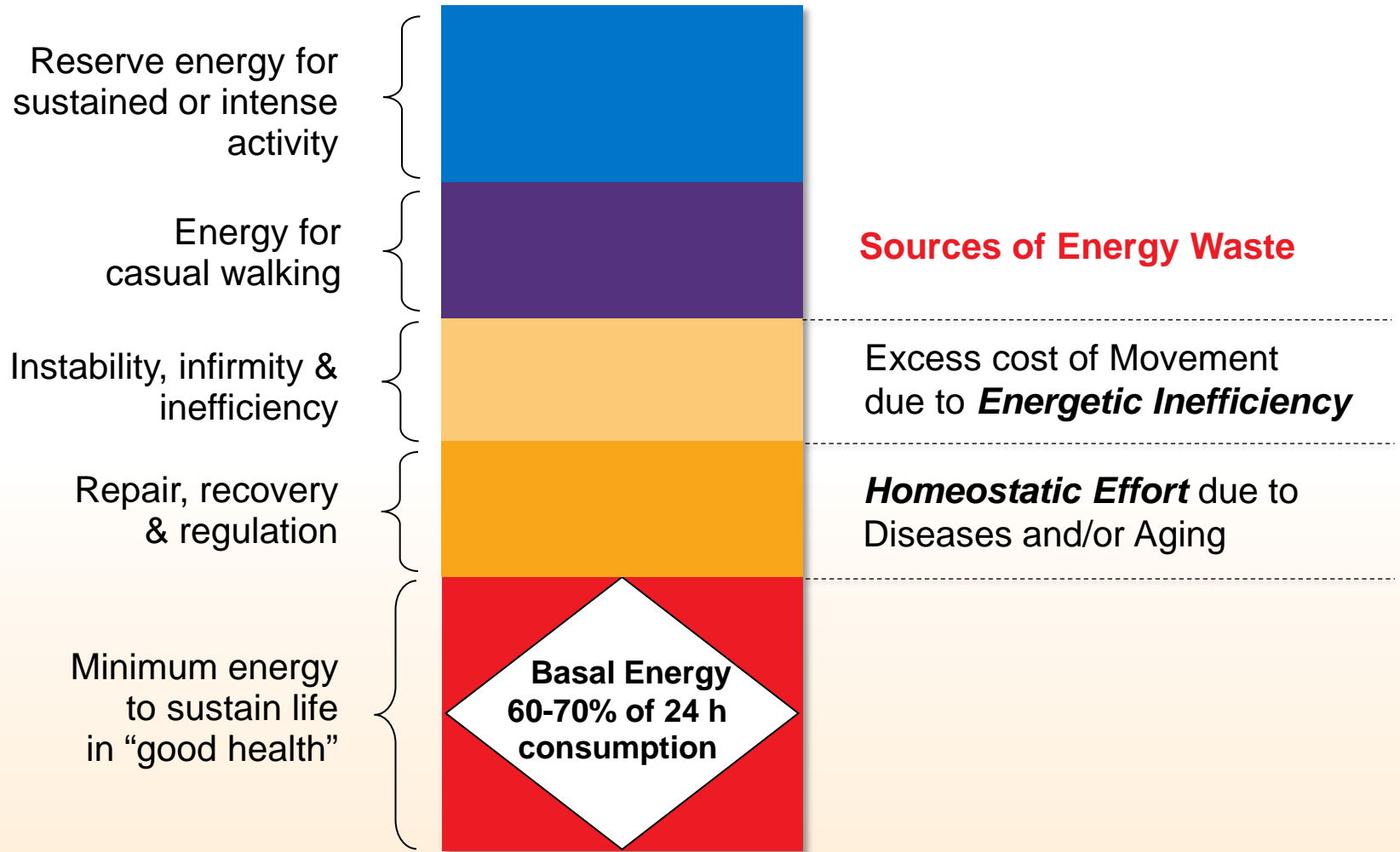
Mid-Thigh CT Images for Women (BMI 30-32)





Energy Imbalance Production Utilization

Energy Budget





How We Measure Energy Efficiency

GLOBAL MOTOR EFFICIENCY

O_2 Consumption / Work Performed



EXERCISE TESTING

ORGANS & TISSUES

CELL BIOLOGY

PHYSICS & BIOMECHANICS

Organs and Tissues

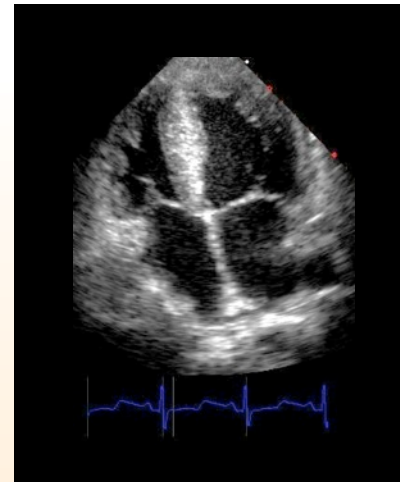
Respiratory Testing

- Oxygen uptake efficiency slope
- Spirometer (FEV1)



CV Testing

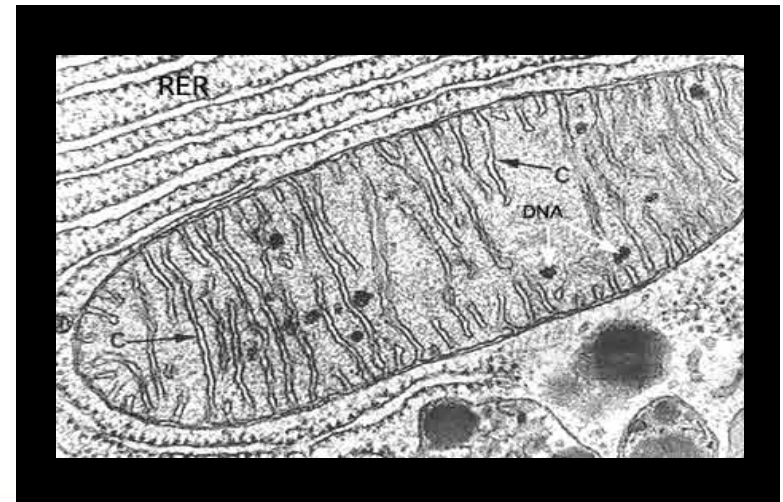
- Cardiac function (Echo)
- Vascular stiffness (PWV)
- Capillary density (biopsy)



Cell Biology

Cell Biology and MRS

- Mito volume
(microscopy + EM)
- Mito content (cardiolipin)
- ADP-ATP phosphorylation
(ATPmax) (31P MRS)
- Phase III mitochondrial
respiration (oxygraph)
- ECT enzyme activity
(NADH oxidase)



Physics and Biomechanics

Gait Testing

- Muscle strength/mass
- Balance
- Joint pathology
- Sensory impairment





Development of a Short Physical Battery to Predict Disability



**Walking 4 m
(0-4) points**



**Maintaining balance
(0-4) points**

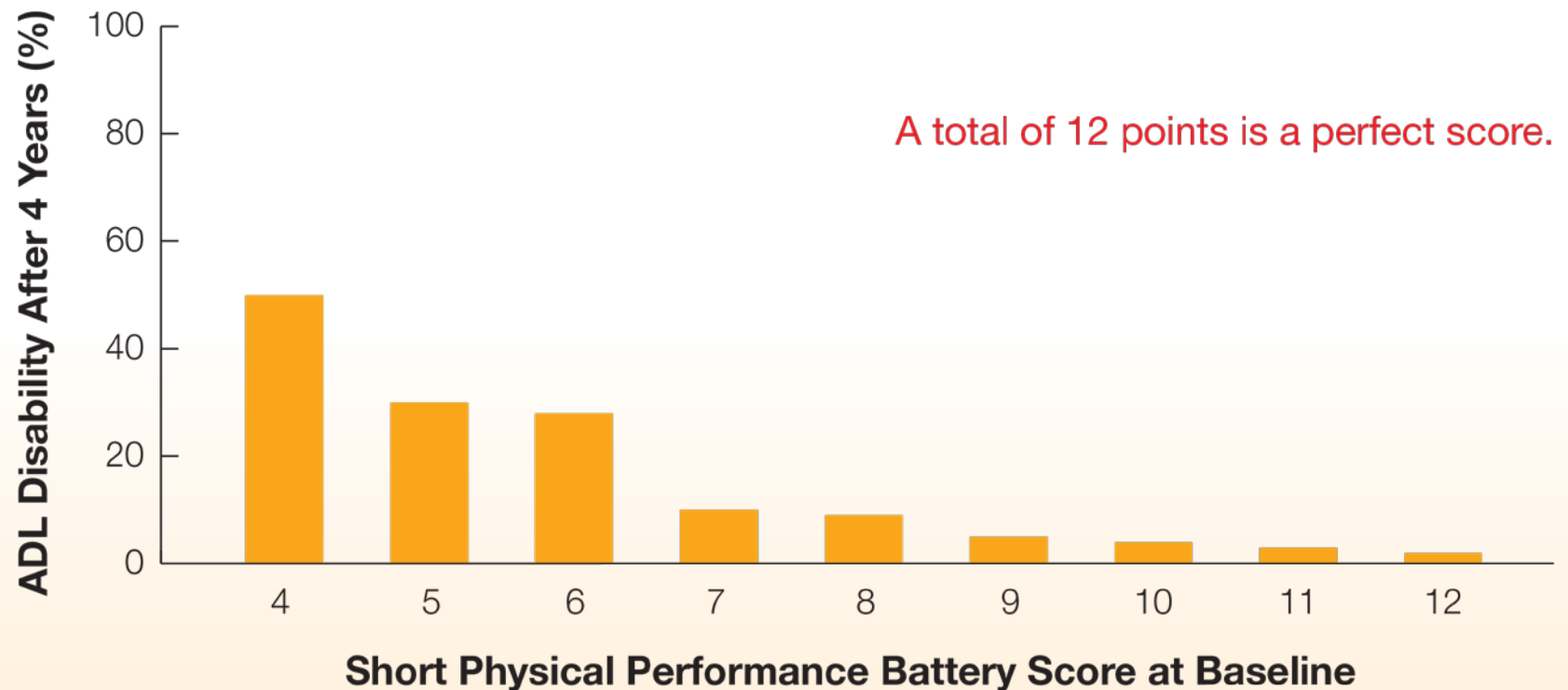


**Chair rising
(0-4) points**



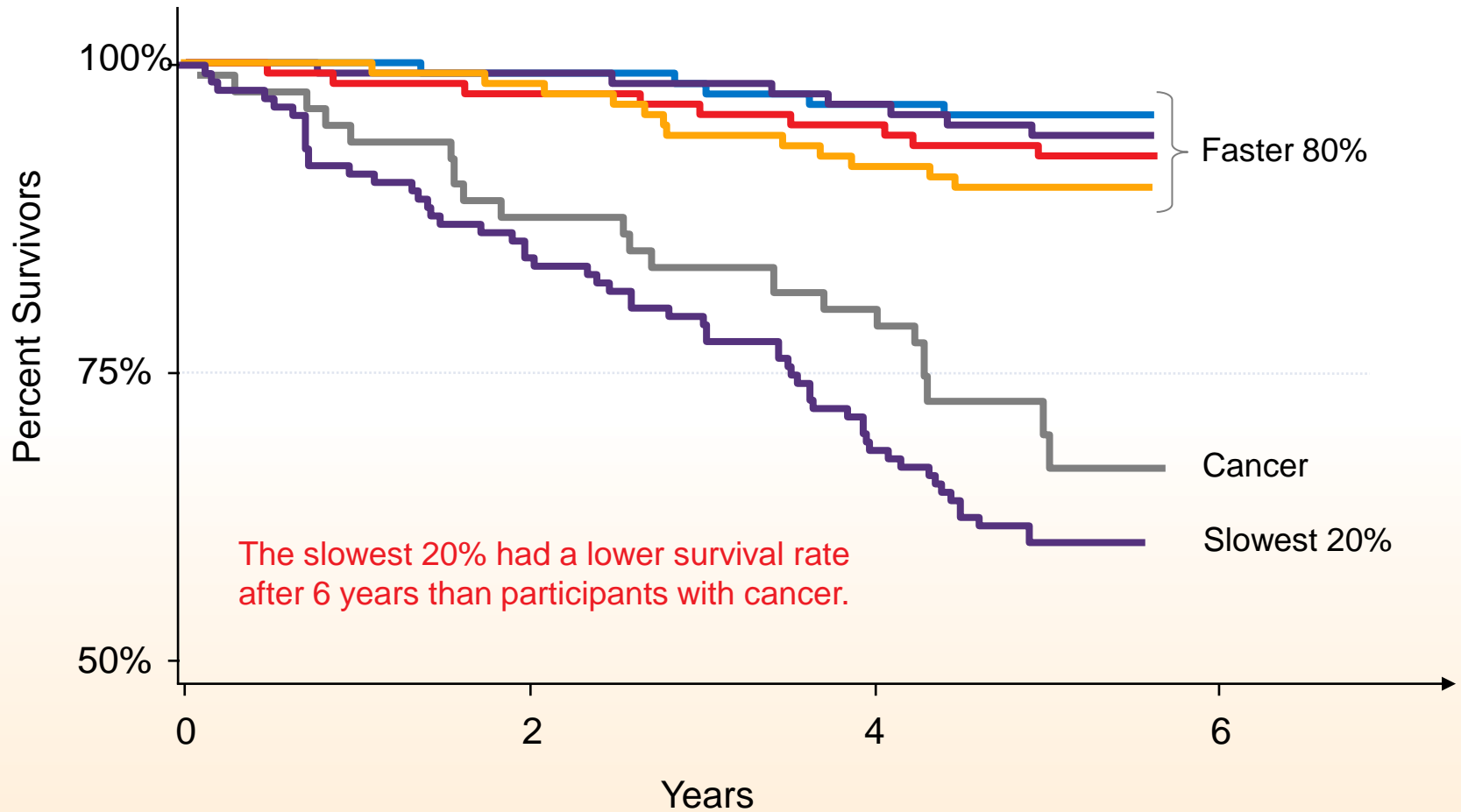
Lower-Extremity Function in Persons over the Age of 70 Years as a Predictor of Subsequent Disability

Jack M. Guralnik, MD, PhD
Luigi Ferrucci, MD, PhD
Eleanor M. Simonsick, PhD
Marcel E. Salive, MD, MPH
Robert B. Wallace, MD





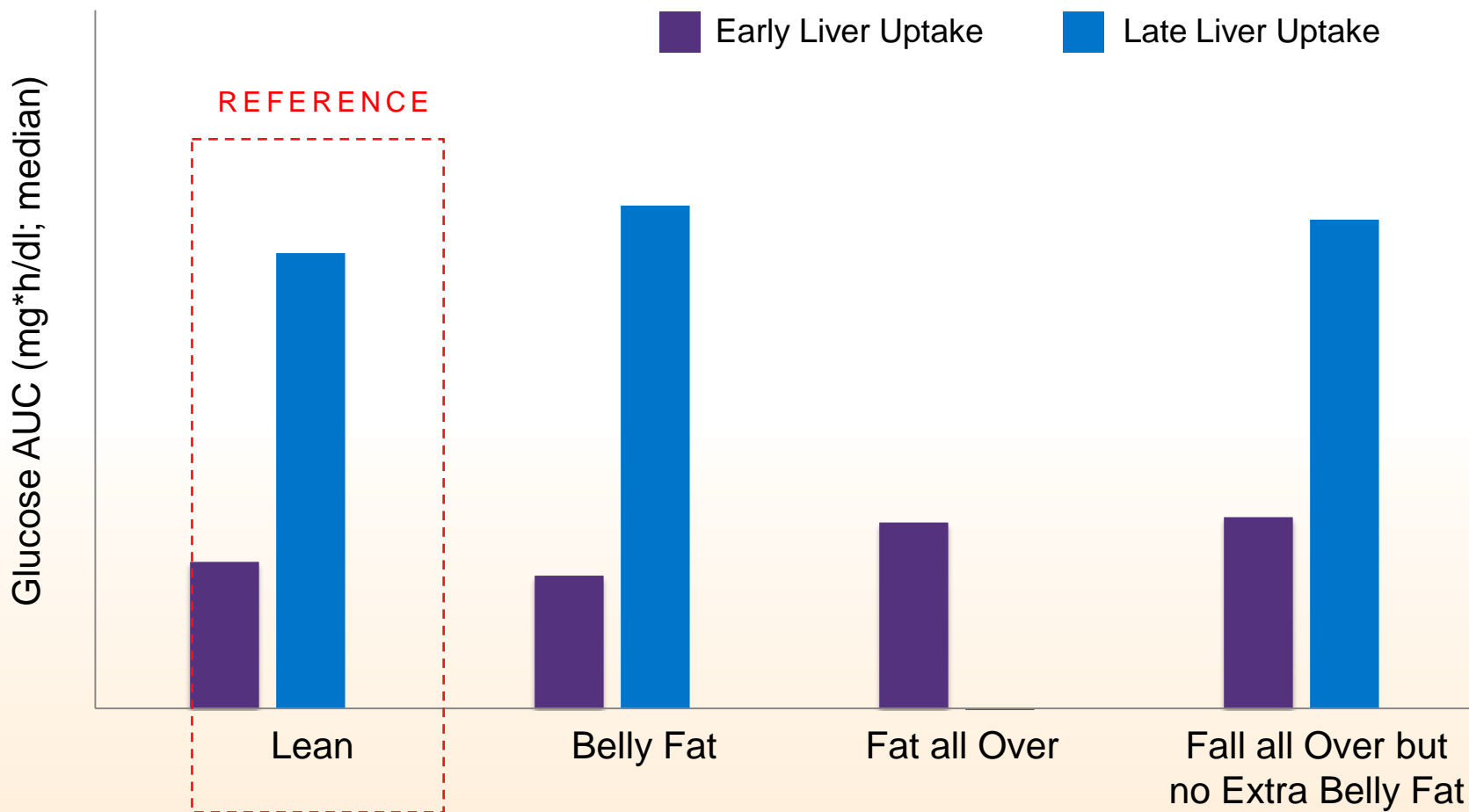
Walking Speed A Powerful Predictor of Mortality





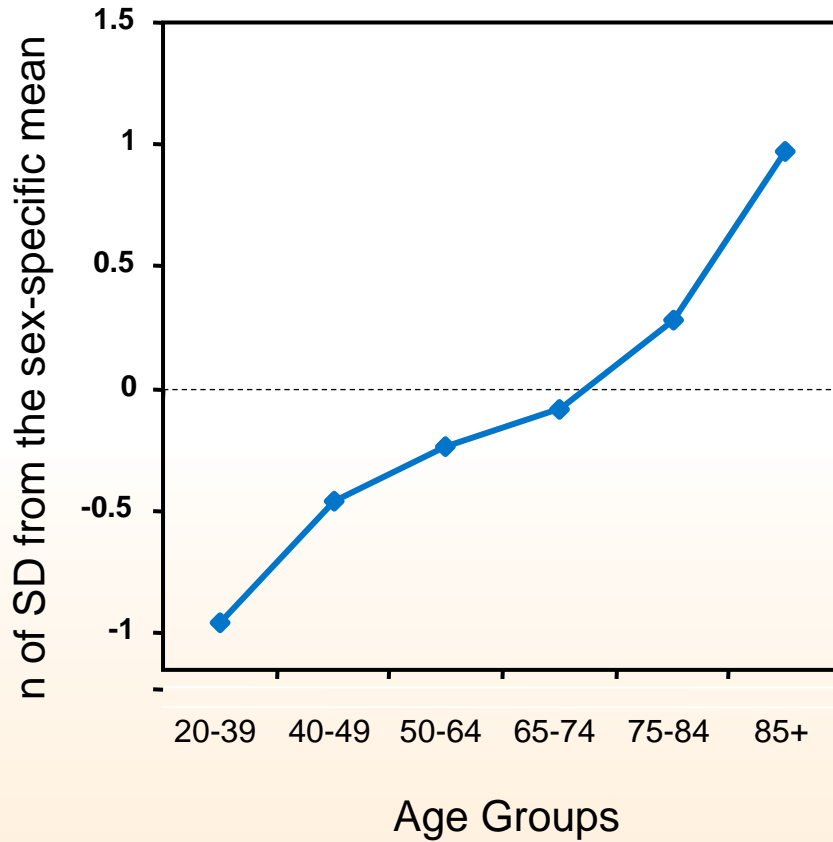
Homeostatic Dysregulation

Fat and Where it is Located is Related to Glucose Intolerance in Older Adults

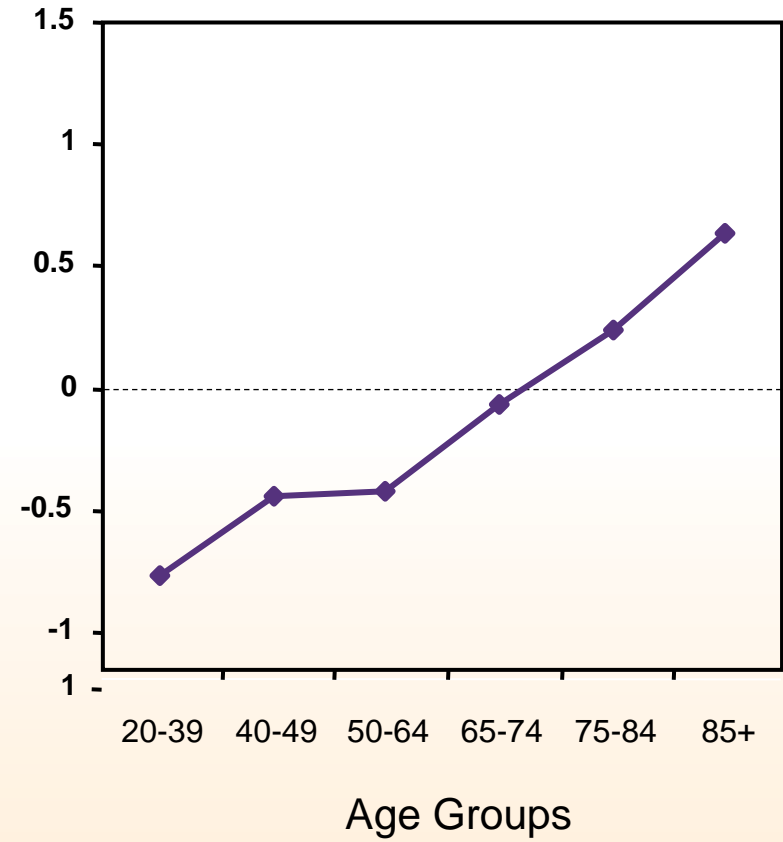


The Mild Pro-Inflammatory State of Aging

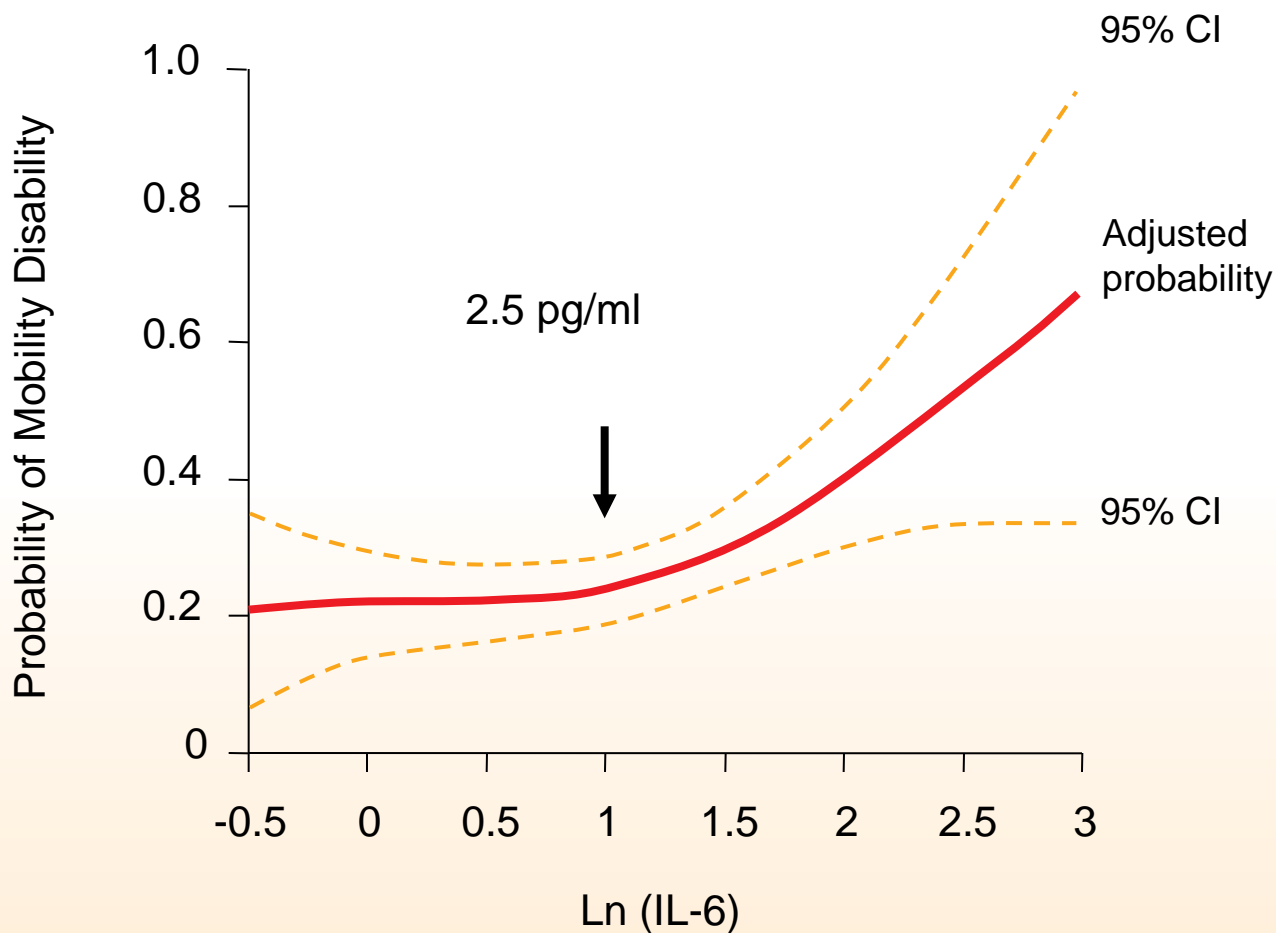
IL-6 in Men



IL-6 in Women



Interleukin-6 Serum Levels in Older Adults Predict Incident Disability 4 years later

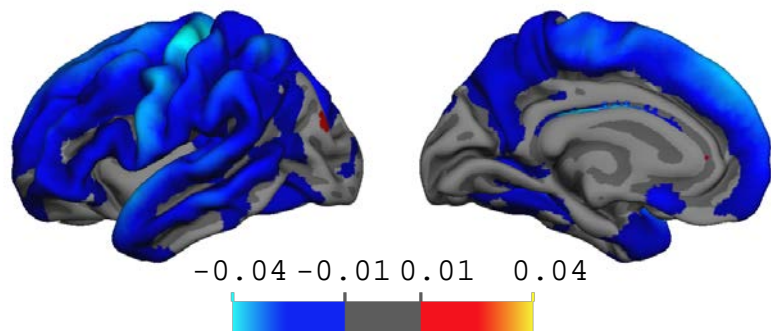




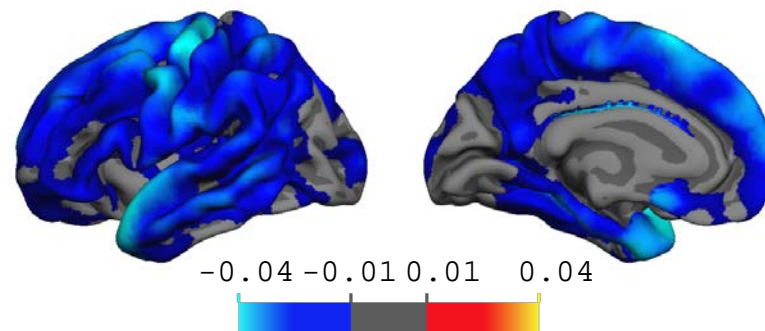
Neurodegeneration

Annual Rates of Cortical Thinning over 8 Years in Normal Aging & Cognitive Impairment

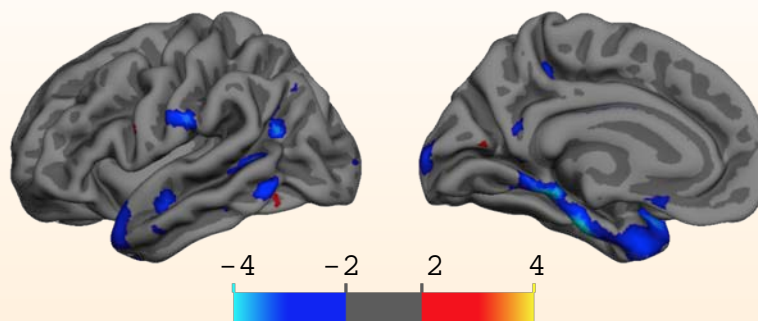
Cognitively Normal (n=96)



Cognitively Impaired (n=25)

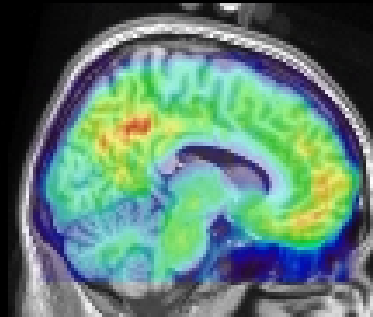
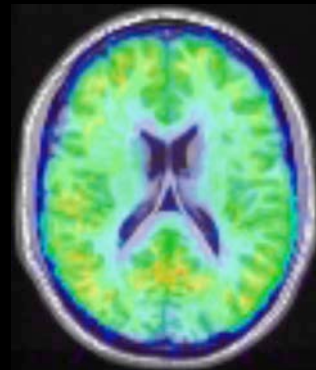


CI > CN

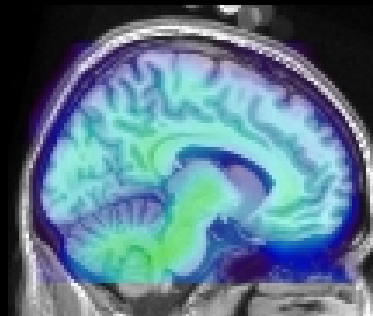


Amyloid Plaques Precede Memory Problems

Memory Problems
4 years later



Stable Memory





Measures in the BLSA Paradigm – A Hierarchical Network of Measures

Homeostatic Network

HORMONES
INFLAMMATION
AUTONOMIC
OX STRESS
NUTRITION
PHYSICAL ACTIVITY

Physiological Domains Relevant for Mobility

CENTRAL NERVOUS SYSTEM
PERIFERAL NERVOUS SYSTEM
MUSCLES
BONES & JOINTS
ENERGY
FEEDBACK

Mobility

SELF-REPORT
PERFORMANCE
GAIT LABORATORY

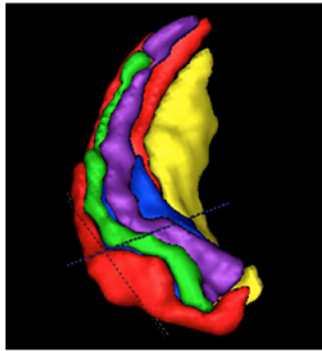


Lessons from the BLSA

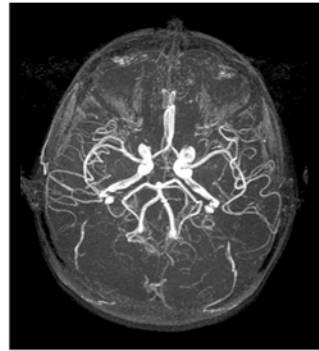
Get Moving

PHYSICAL ACTIVITY

✓ Better Functioning Hippocampus



✓ More Blood and Oxygen to Brain

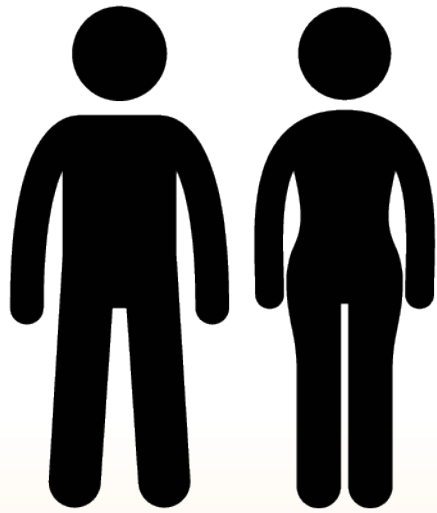


✓ Enhanced Fitness

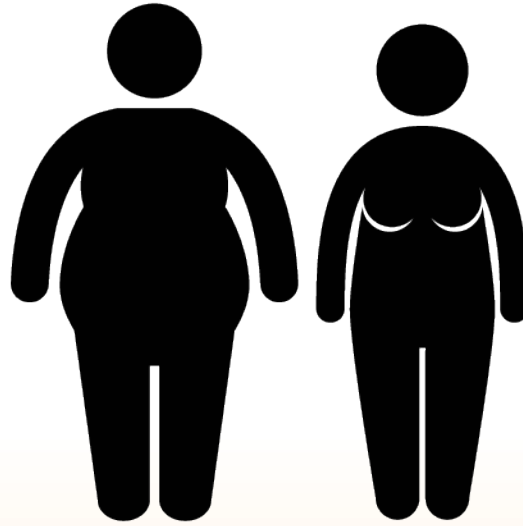


ENHANCED COGNITIVE & PHYSICAL FUNCTION

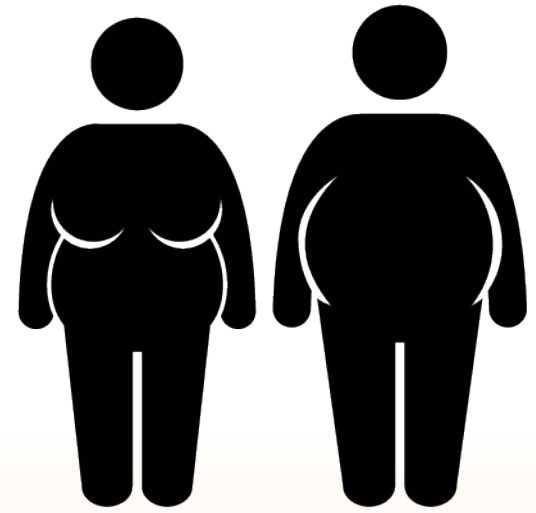
Pay Attention to Weight and Shape



LEAN



PEAR

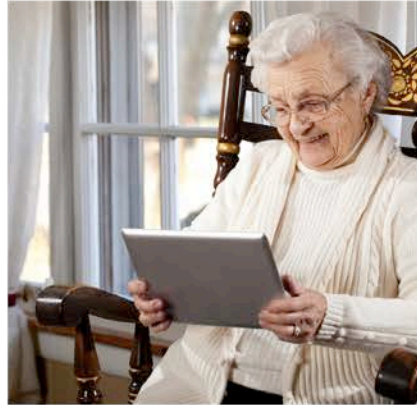


APPLE

Think About What you Eat

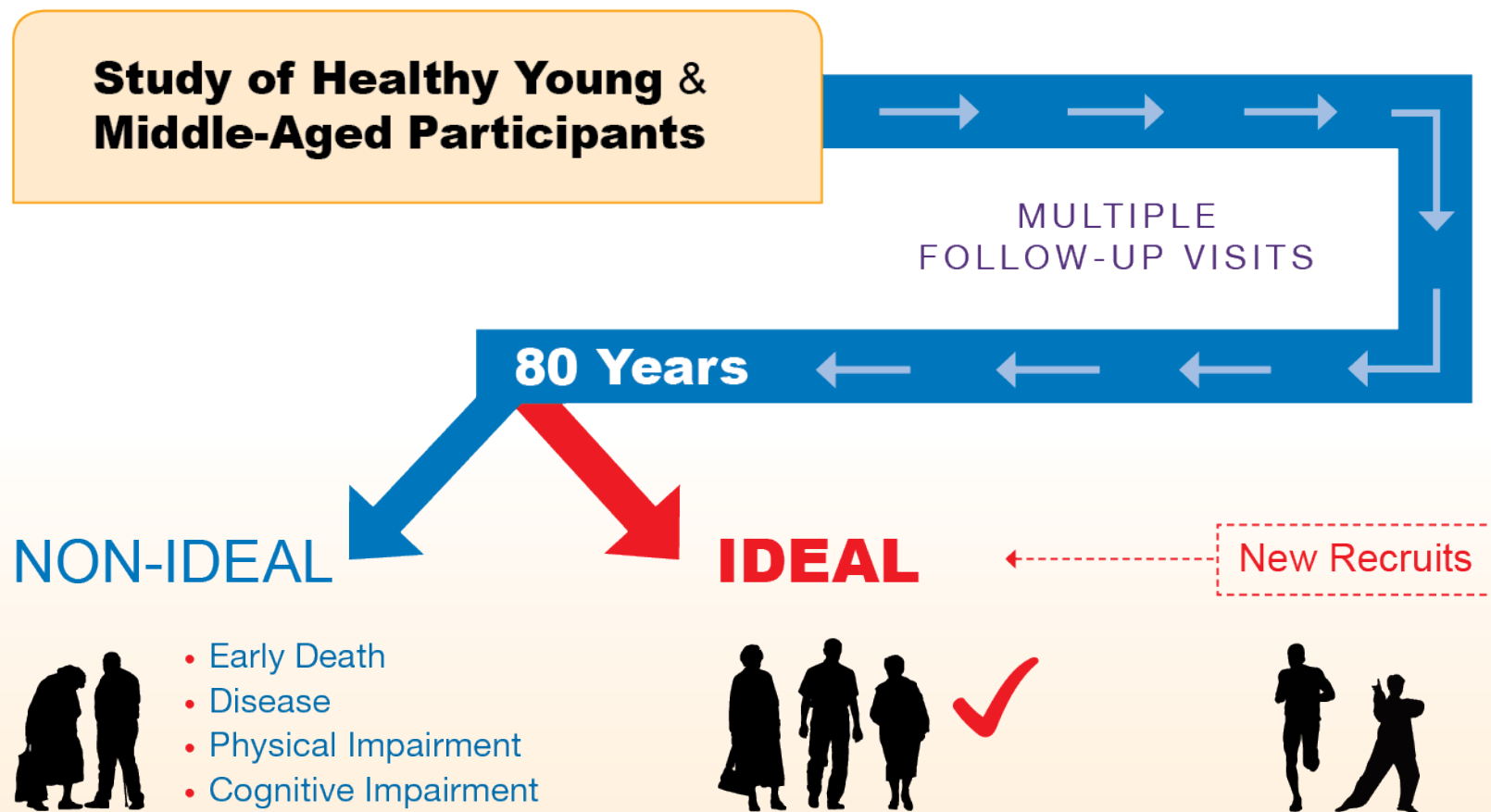


Participate in Activities you Enjoy

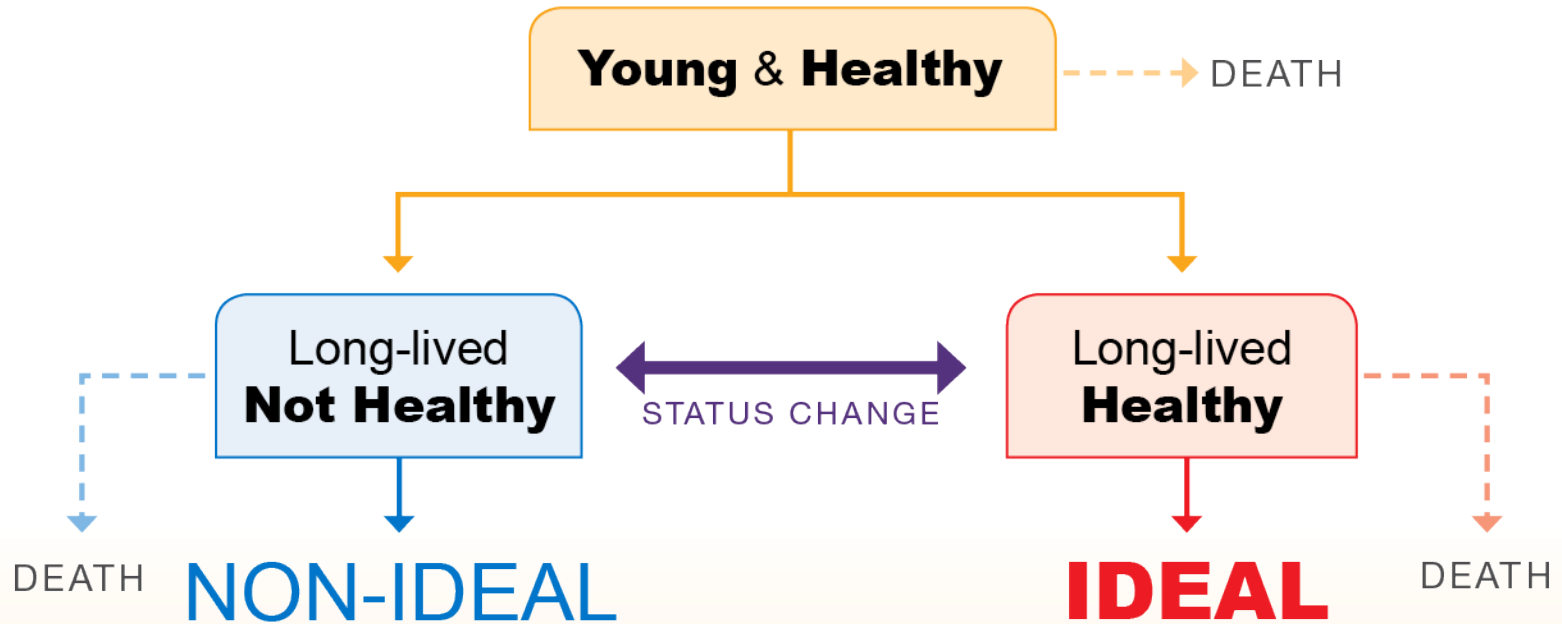


The BLSA

Baltimore Longitudinal Study of Aging



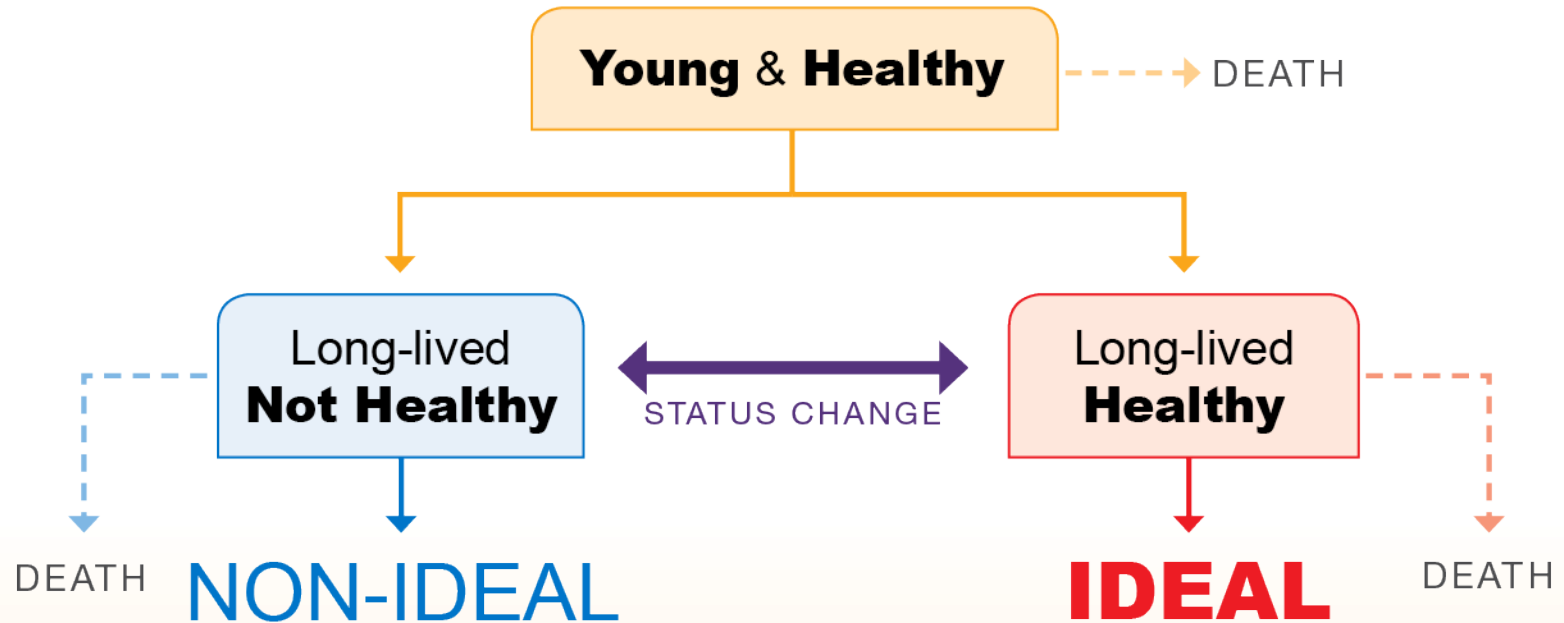
What Can We Learn From IDEAL?



What differentiates people who survive to old age maintaining an IDEAL condition compared to those who also survive to old age but develop diseases and functional impairments?

What Can We Learn From IDEAL?

(cont'd)



What are the risk factors for mortality or losing IDEAL status in IDEAL persons

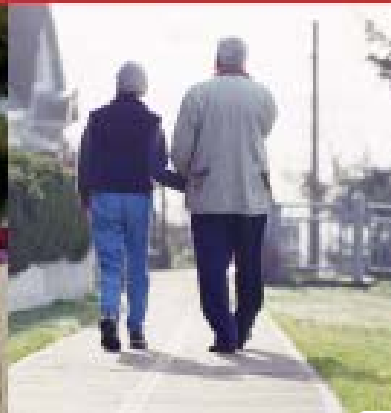


ideal

Insight into Determinants of
Exceptional Aging and Longevity

Are you ✓ 80 or older?
✓ Mentally sharp?
✓ In great health?

You may be an exceptional ager!



1-855-80 IDEAL (1-855-804-3325)
www.nia.nih.gov/ideal



A Study for our Children and the Children of our Children





QUESTIONS?
