Invecchiamento

La Rete Omeostatica in Sciopero

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National Institute on Aging
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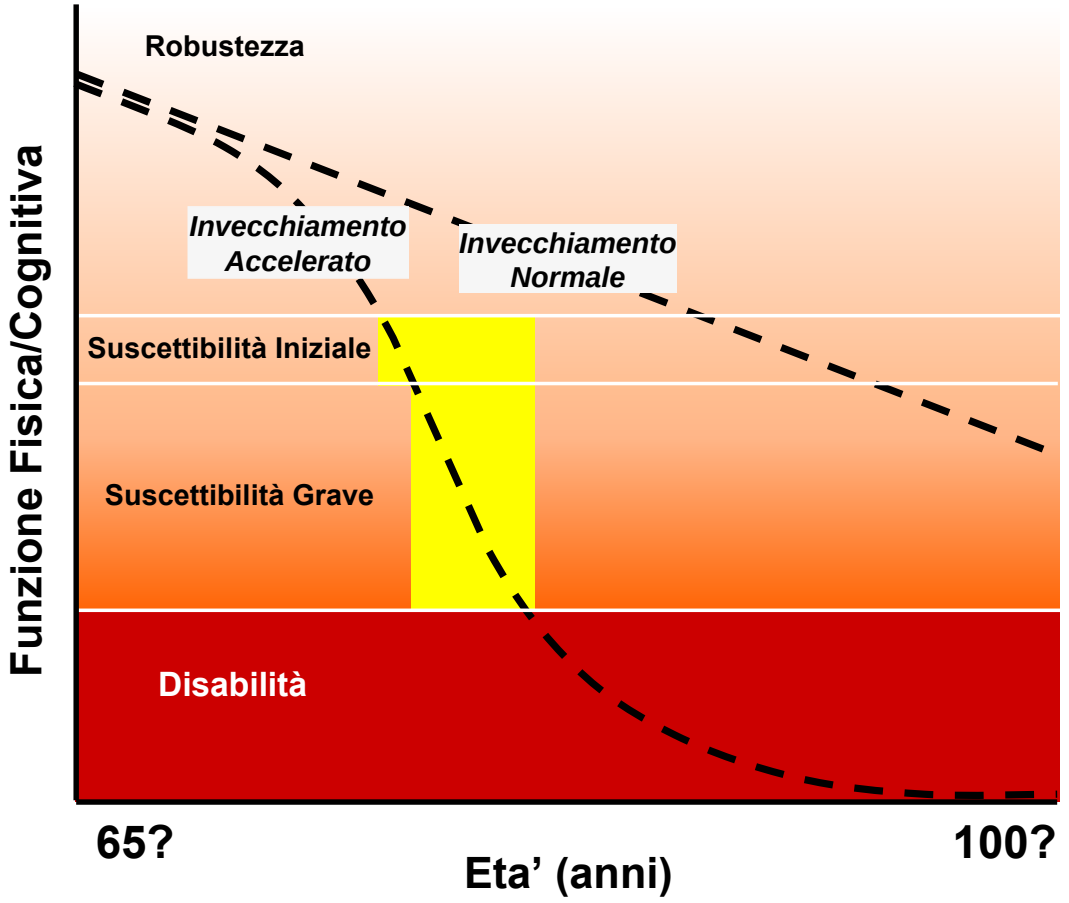
Pieter Bruegel: La torre di Babele, 1563

Paradigma dell'Invecchiamento

"La Velocità e le Soglie del Declino"



Screening della Suscettibilità

Stress Estremo Potenzialmente Letale

Stress Intenso (Malattia, Chemioterapia)

Test Provocativi
Misure Fisiologiche
Misure di Perfomance
Imaging

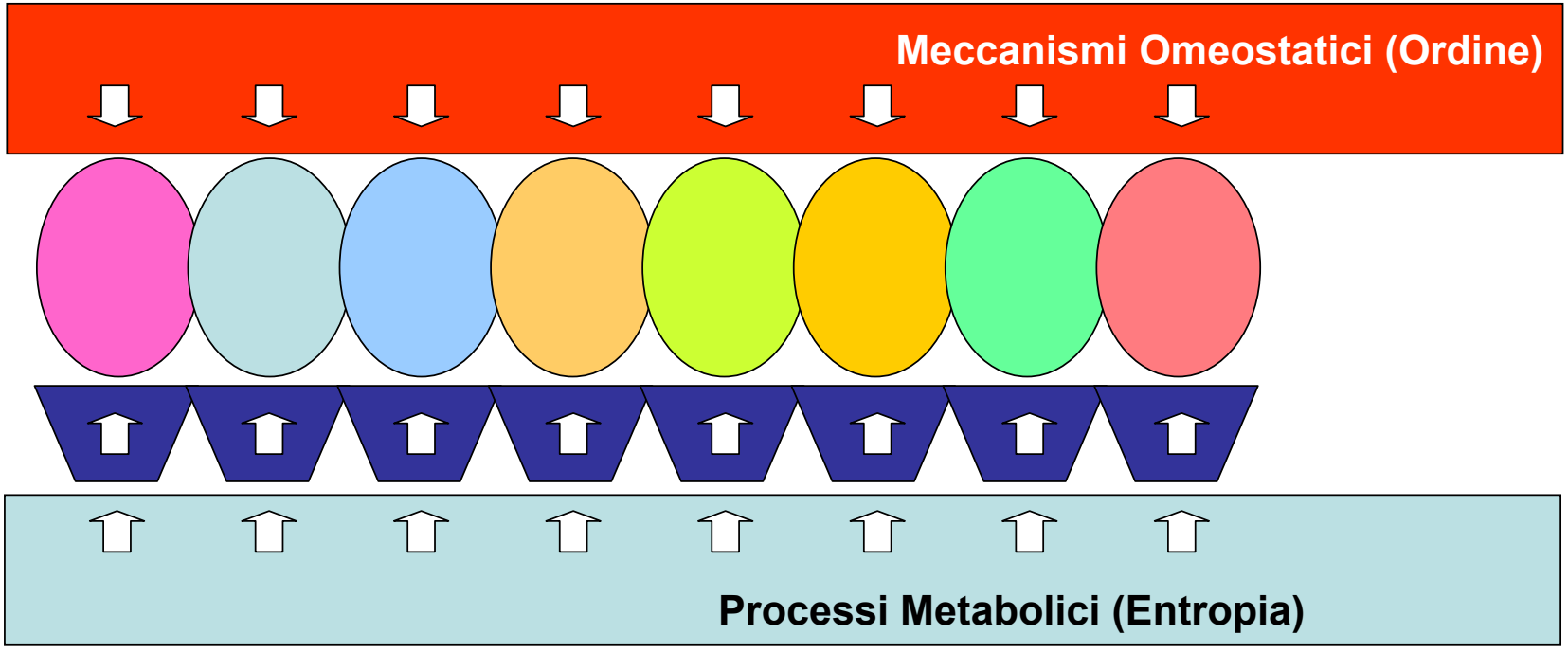
Osservazione o Self-Report

Il Modello Omeostatico

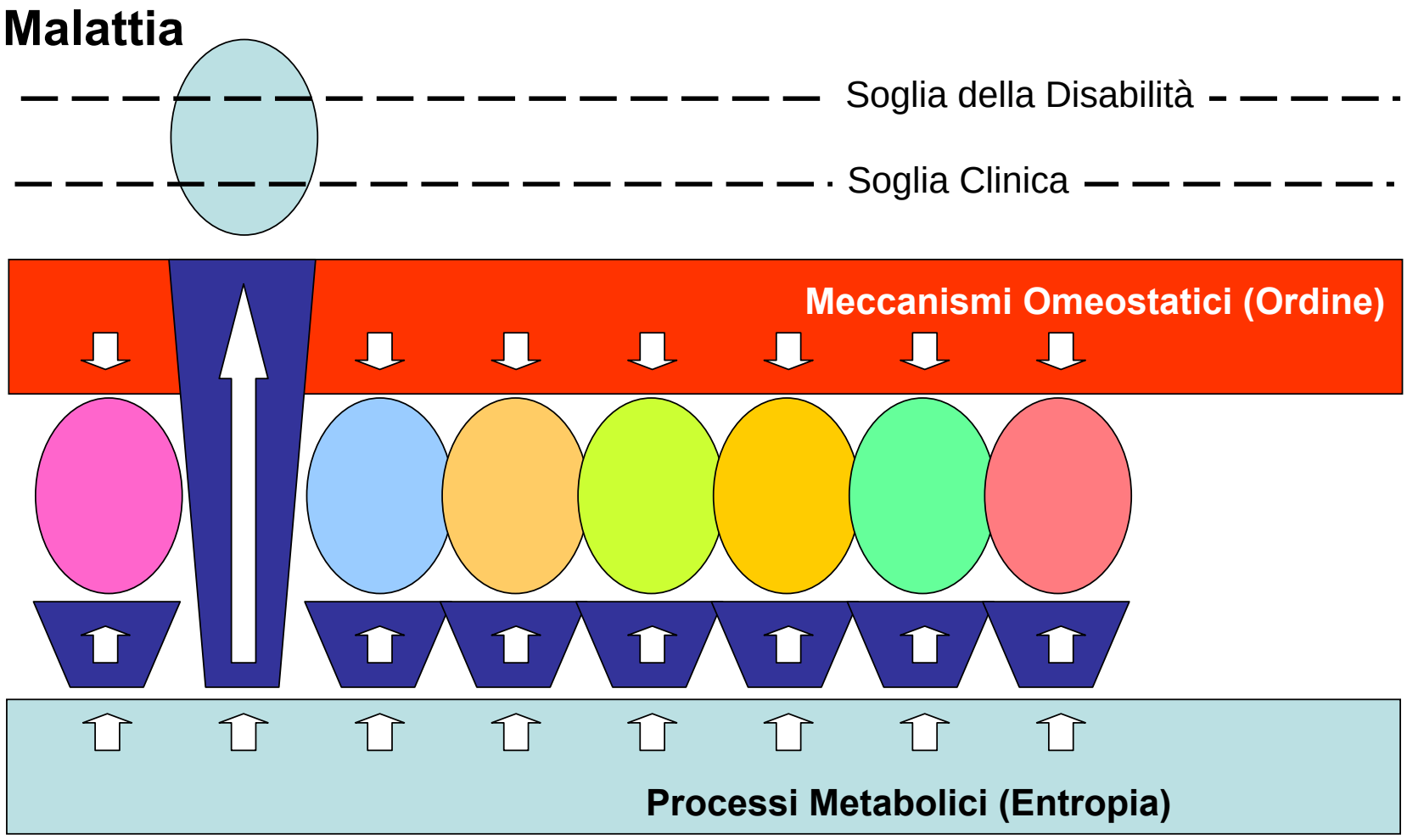
Perfezione Omeostatica

Soglia della Disabilità

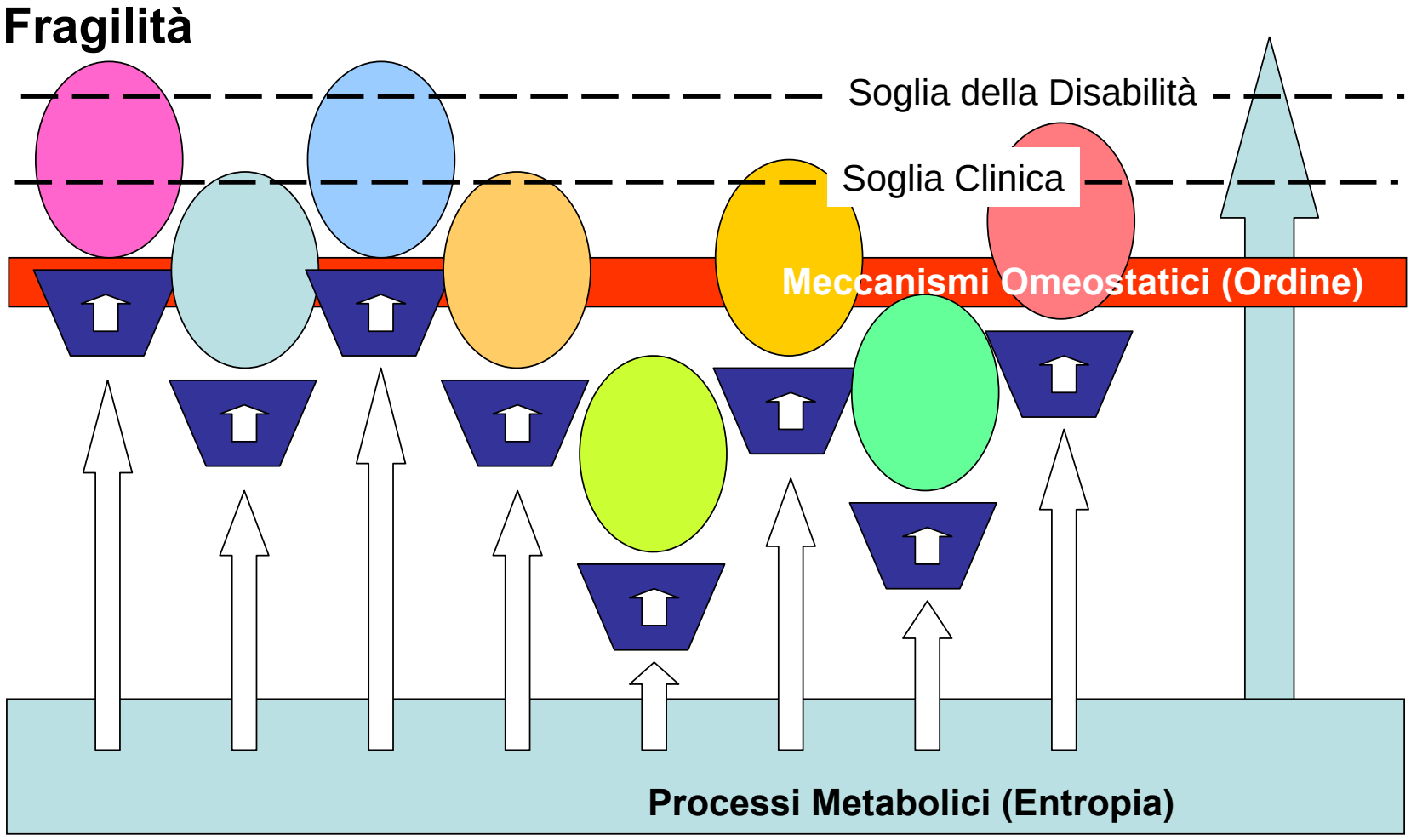
Soglia Clinica



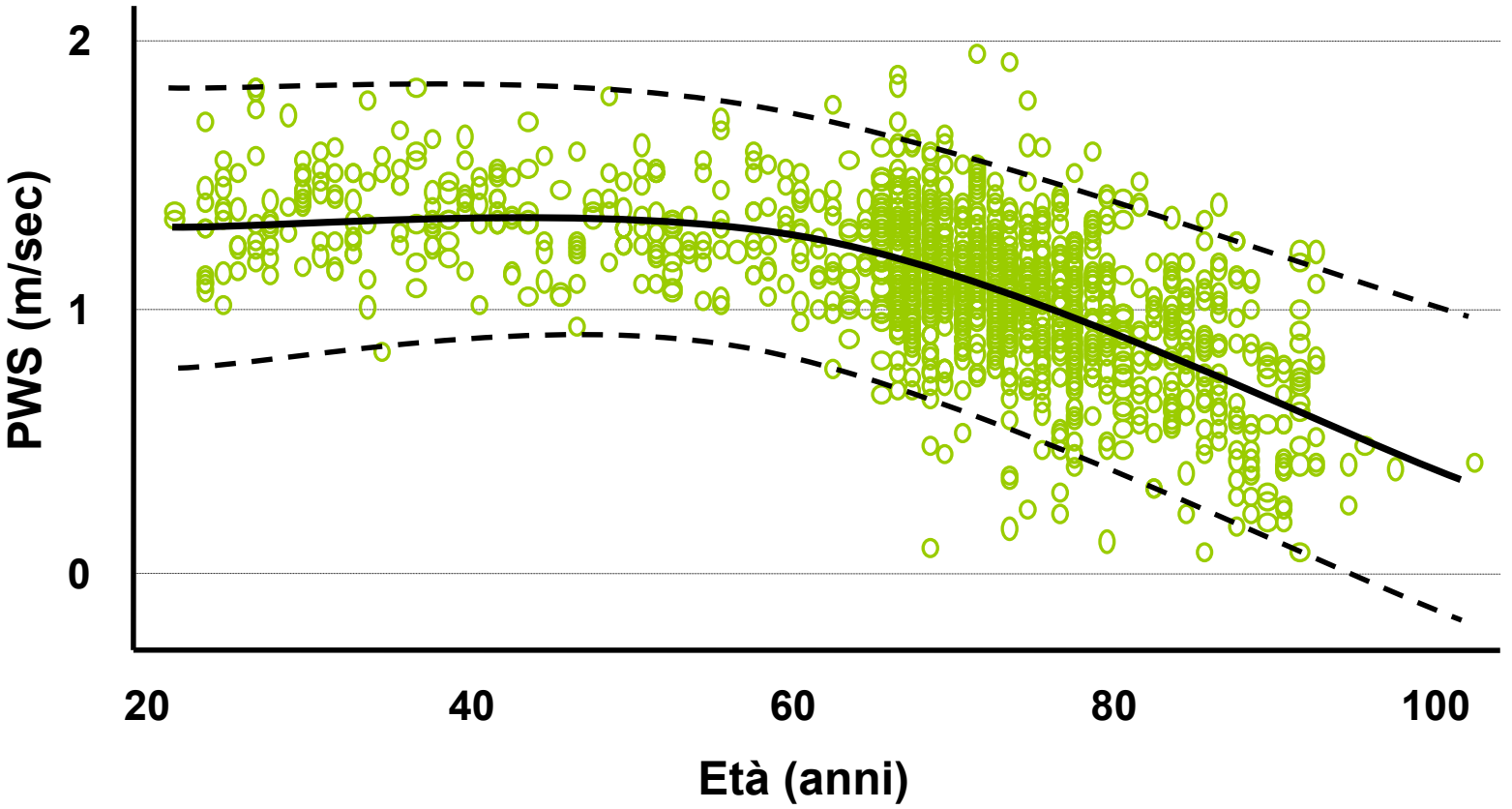
Il Modello Omeostatico



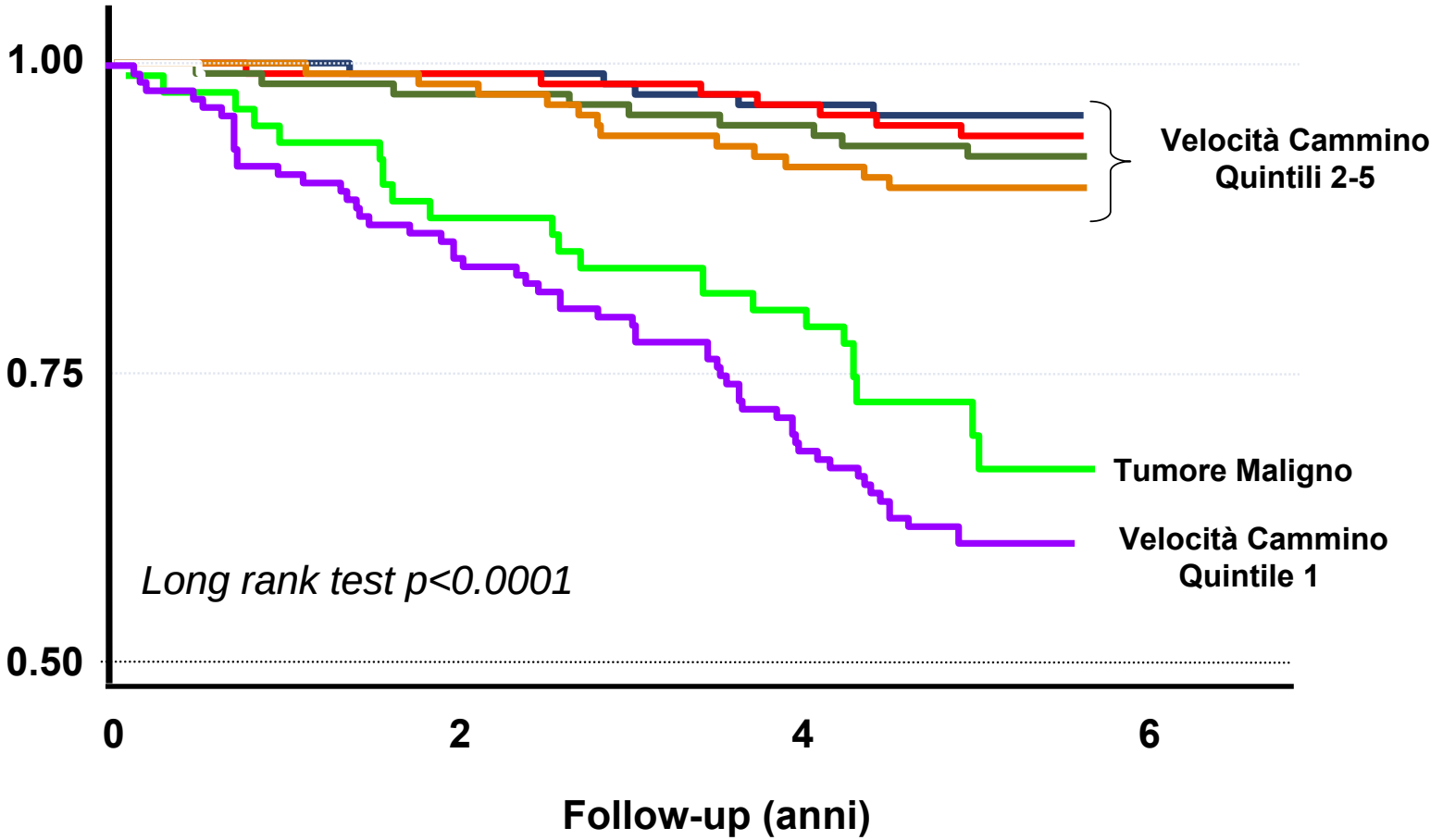
Il Modello Omeostatico



Velocità del Cammino ed Età



La Velocità del Cammino Predice la Mortalità



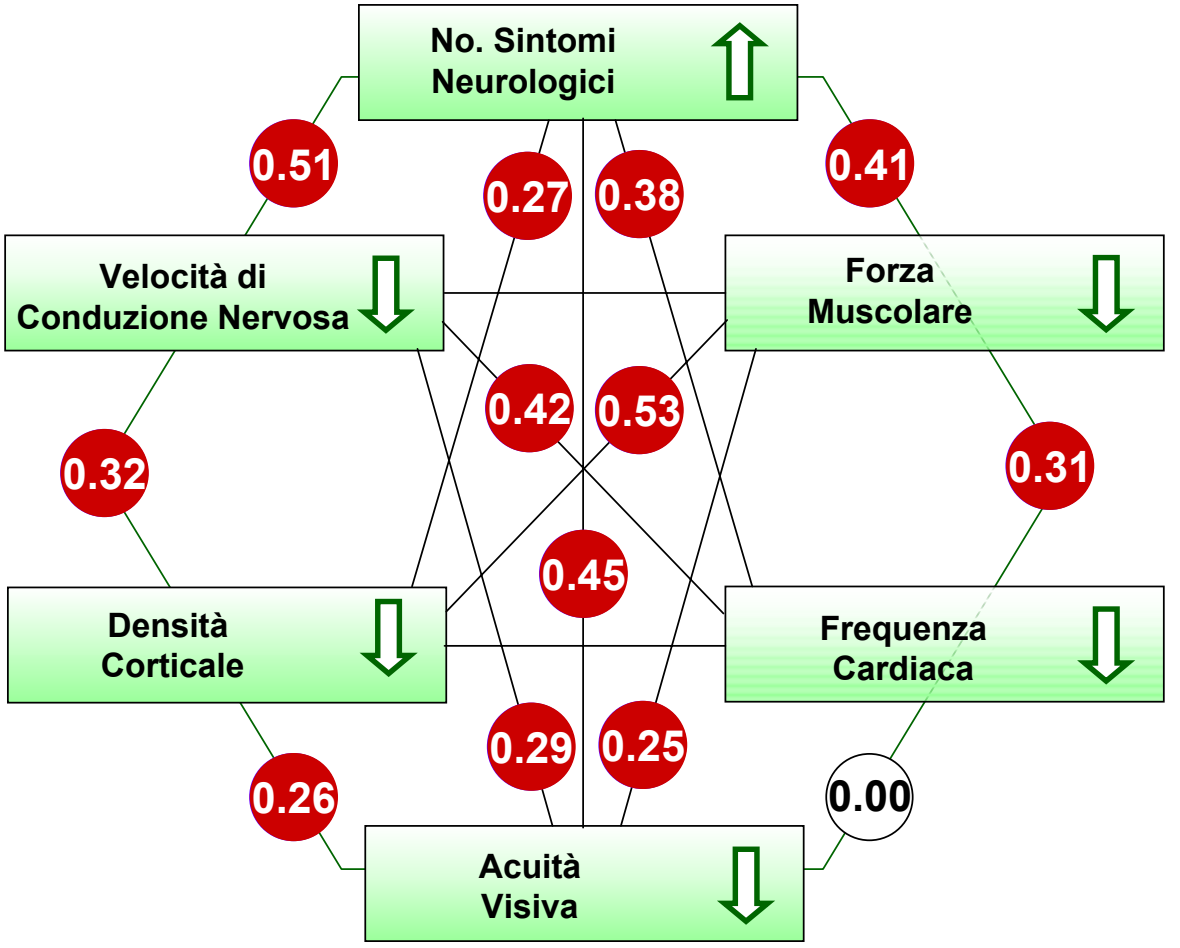
Ble & Ferrucci (unpublished)

La Rete Omeostatica

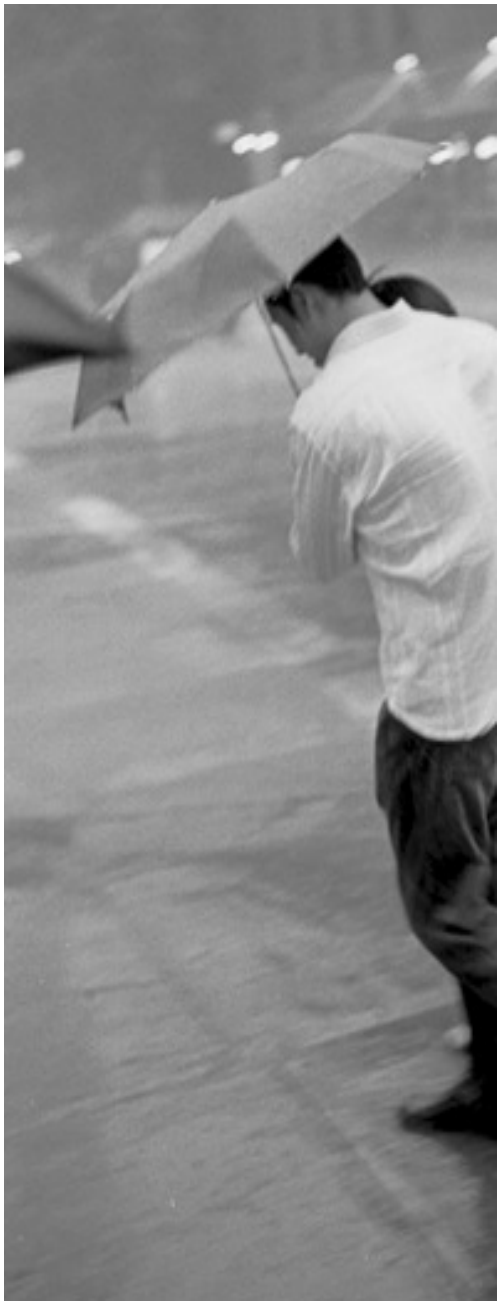
Rete Omeostatica	Domini Fisiologici della Mobilità	Outcome
Ormoni	SNC	
Infiammazione	SNP	
SNA	Muscoli	Mobilità
Stress Ossidativo	Ossa Articolazioni	
Nutrizione Ossigeno	Energia	
Attività Fisica	Sistema Somato-Sensoriale	

Correlazione tra le Velocità di Variazione di Parametri Fisiologici Importanti per il Cammino

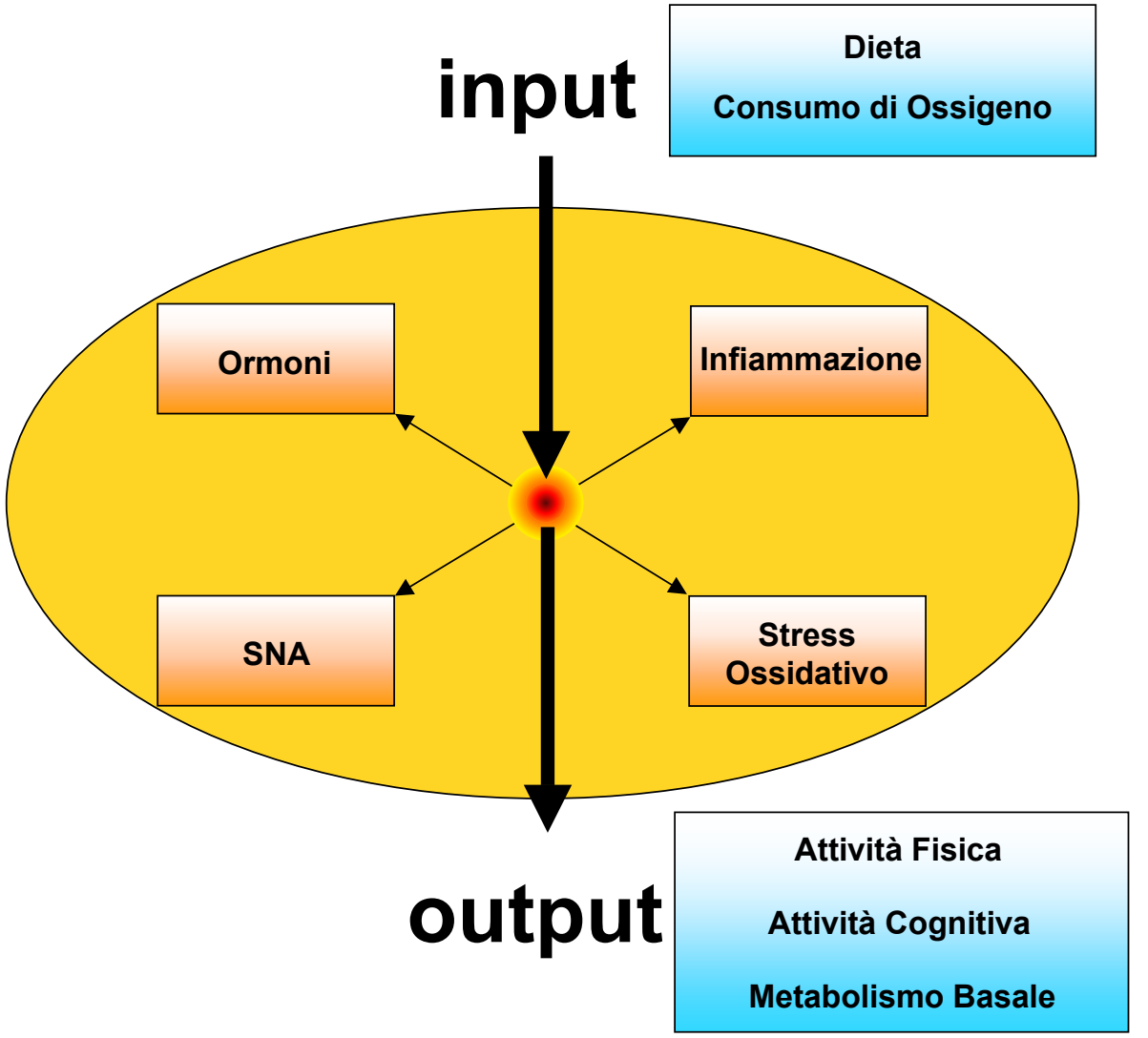
(InCHIANTI, n=1055)



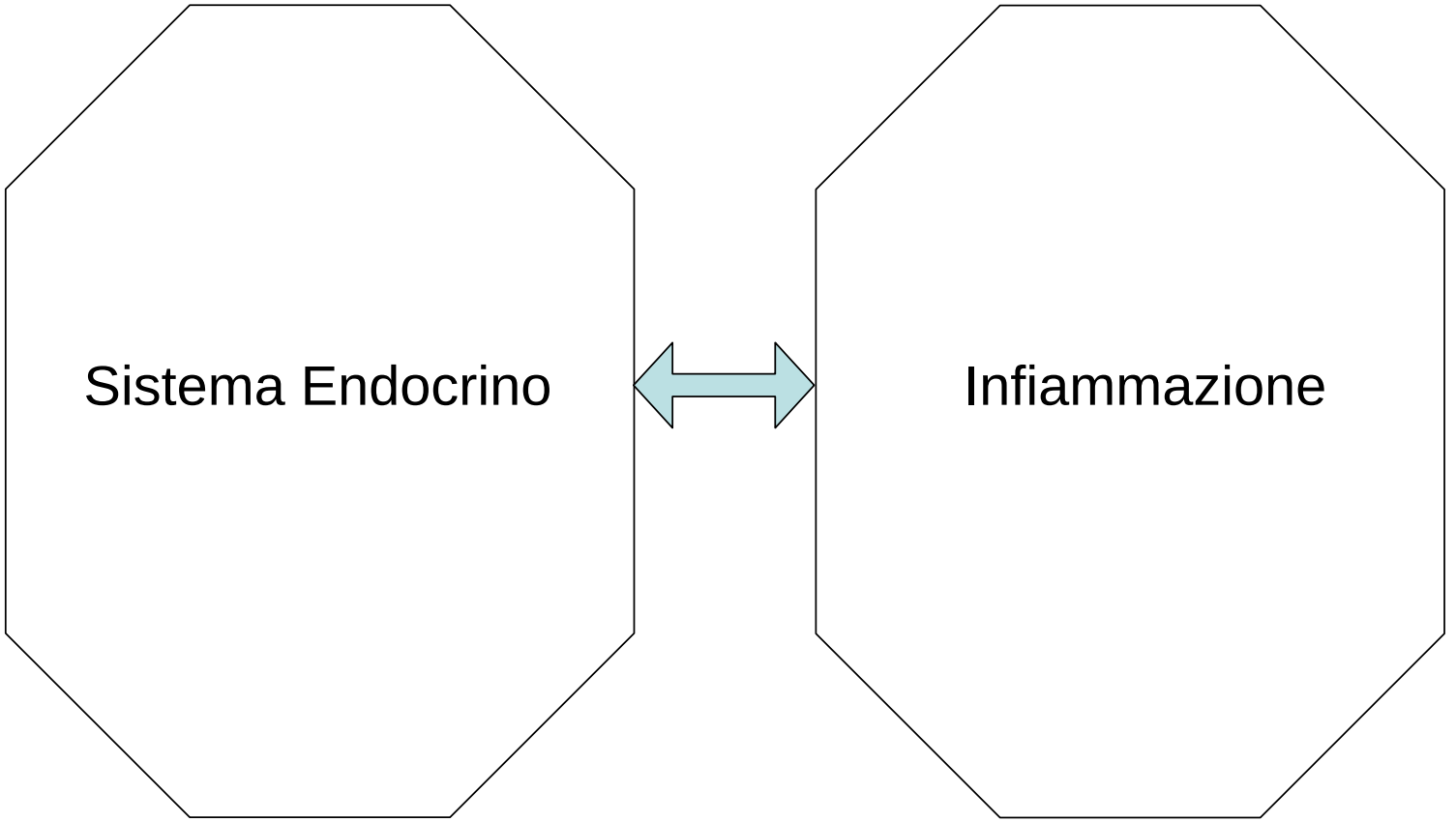
Media Cruda	r=0.39 (p<.001)
Media Aggiustata per Età	r=0.13 (p<.001)

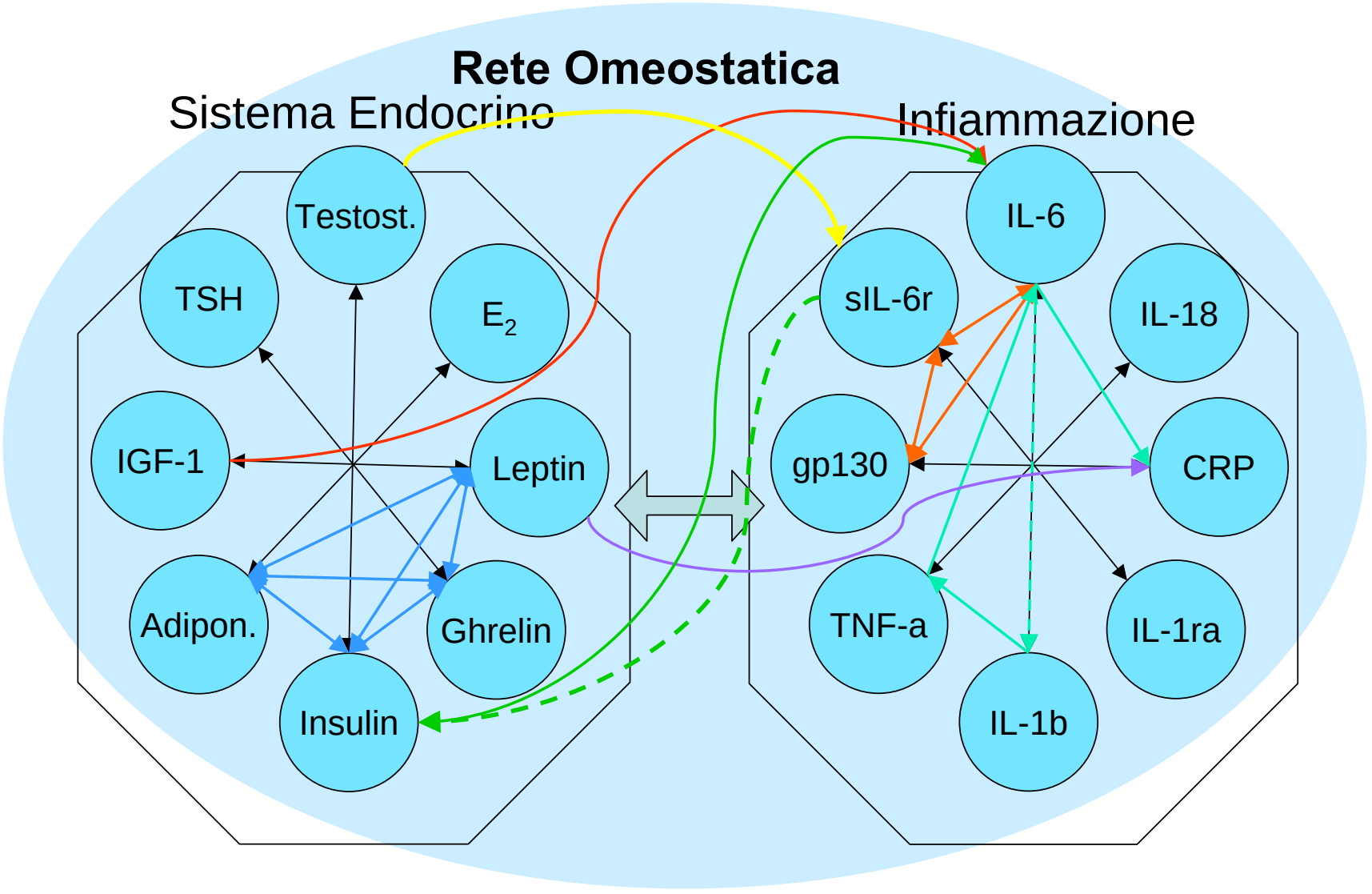


Rete Omeostatica



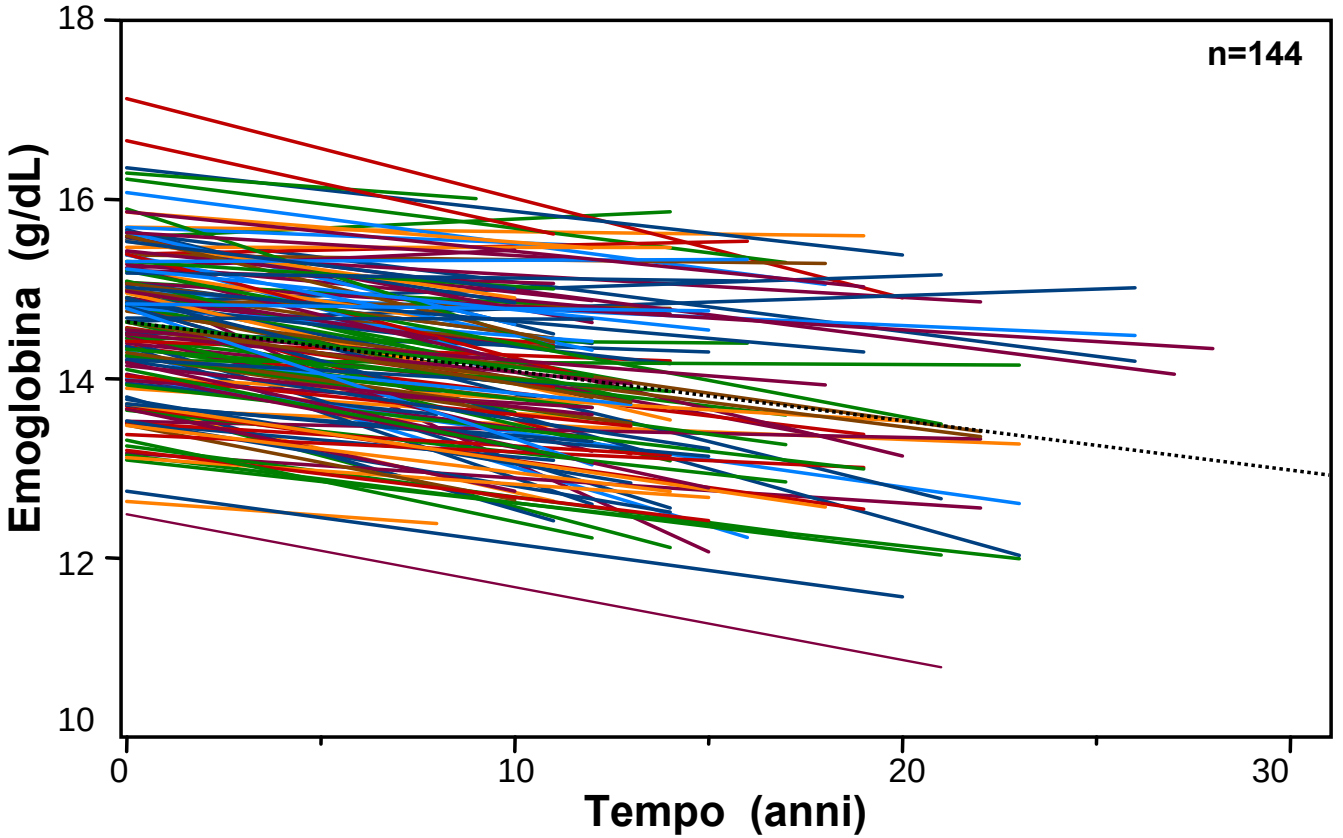
Interazione tra Domini Diversi della Rete Omeostatica




Rete Omeostatica
Sistema Endocrino
Infiammazione
Testost.
TSH
E2
IGF-1
Leptin
Adipon.
Ghrelin
Insulin
IL-6
sIL-6r
IL-18
gp130
CRP
TNF-a
IL-1ra
IL-1b

Anemia nel Vecchio

Traiettorie Longitudinali Hb in 144 Partecipanti (BLSA)



Ershler WB et al. J Am Geriatr Soc. 2005 Aug;53(8):1360-5.

Anemia nel Vecchio

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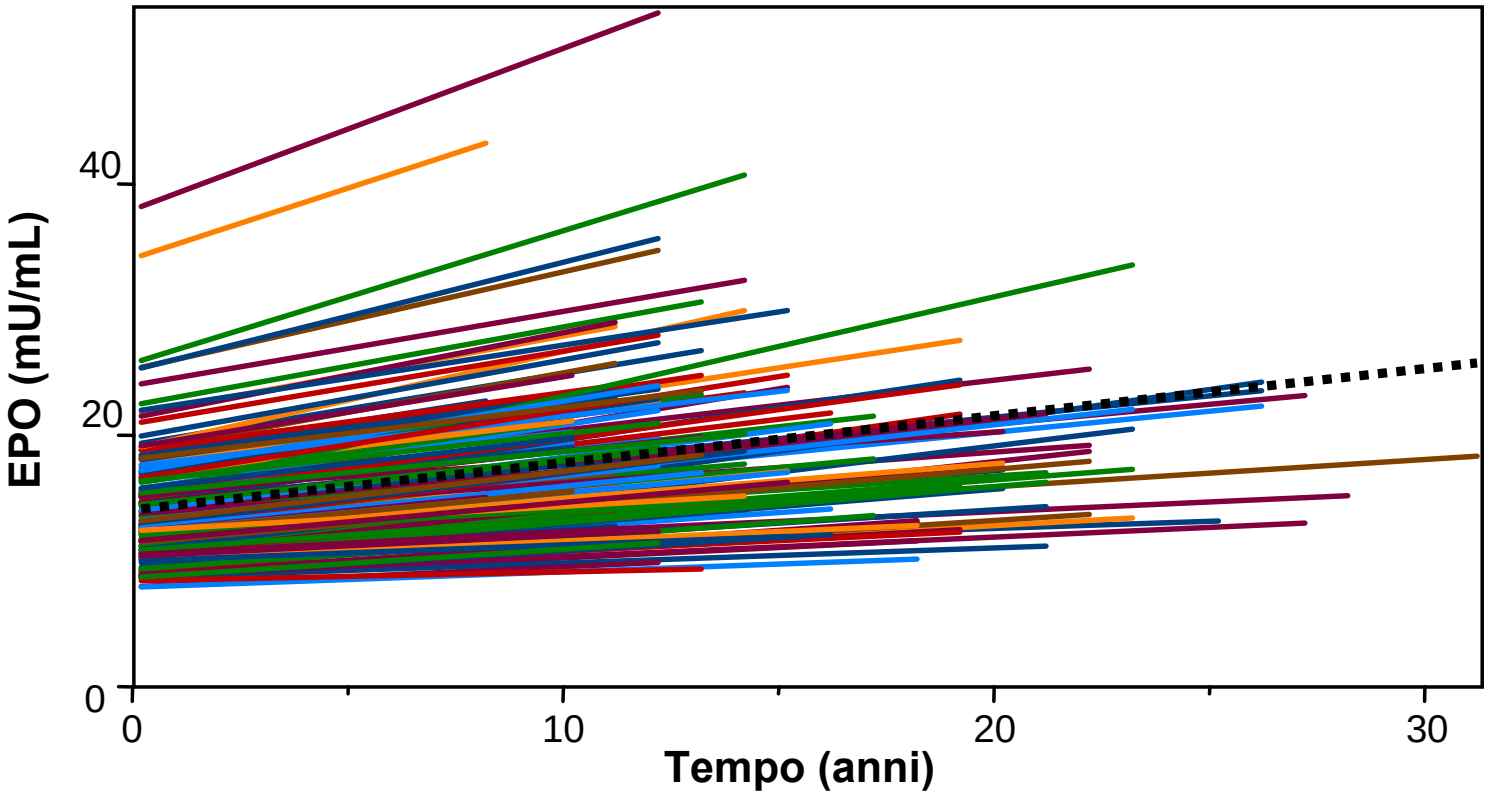
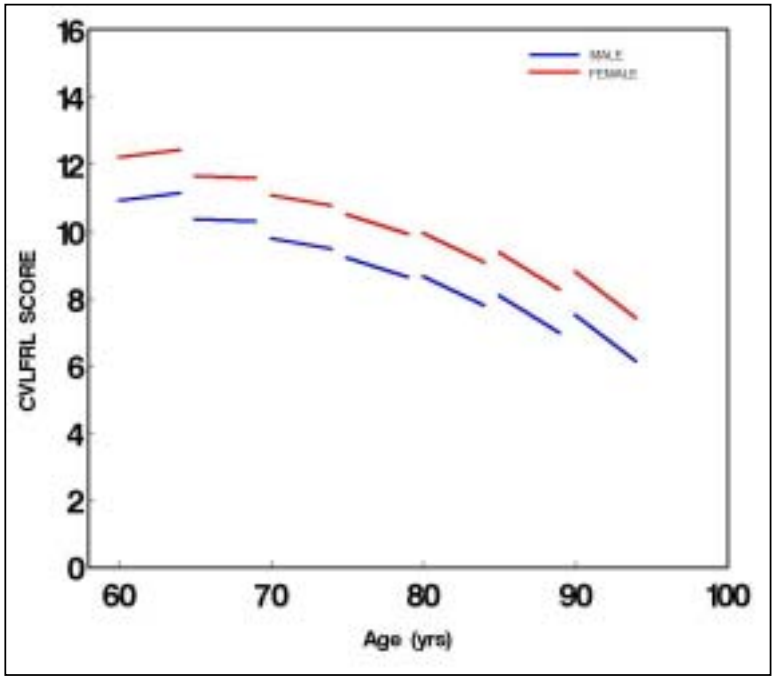


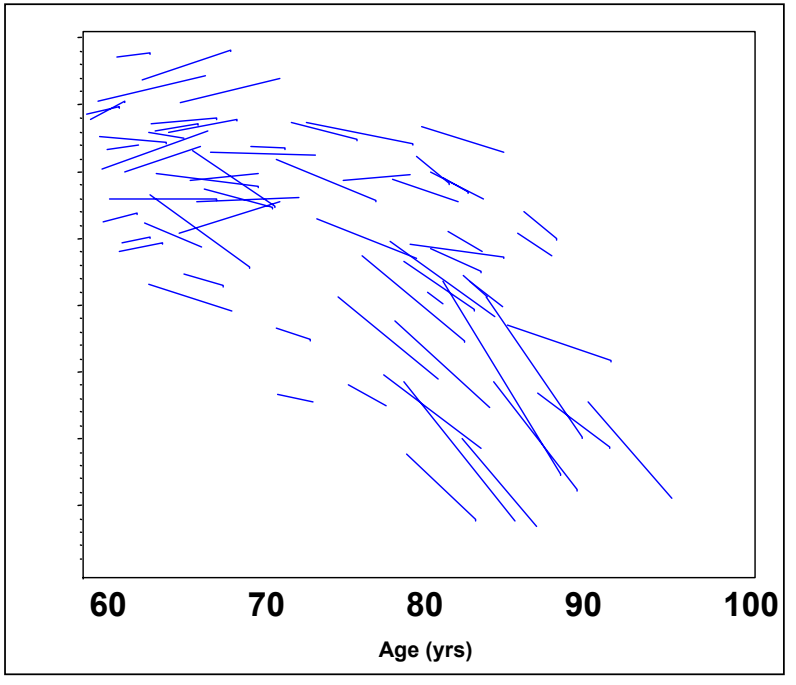
Ershler WB et al. J Am Geriatr Soc. 2005 Aug;53(8):1360-5.

California Verbal Learning Test (CVLT): Age Differences and Age Changes in Delayed Free Recall

Adapted from Lamar et al., Neurology, 2003

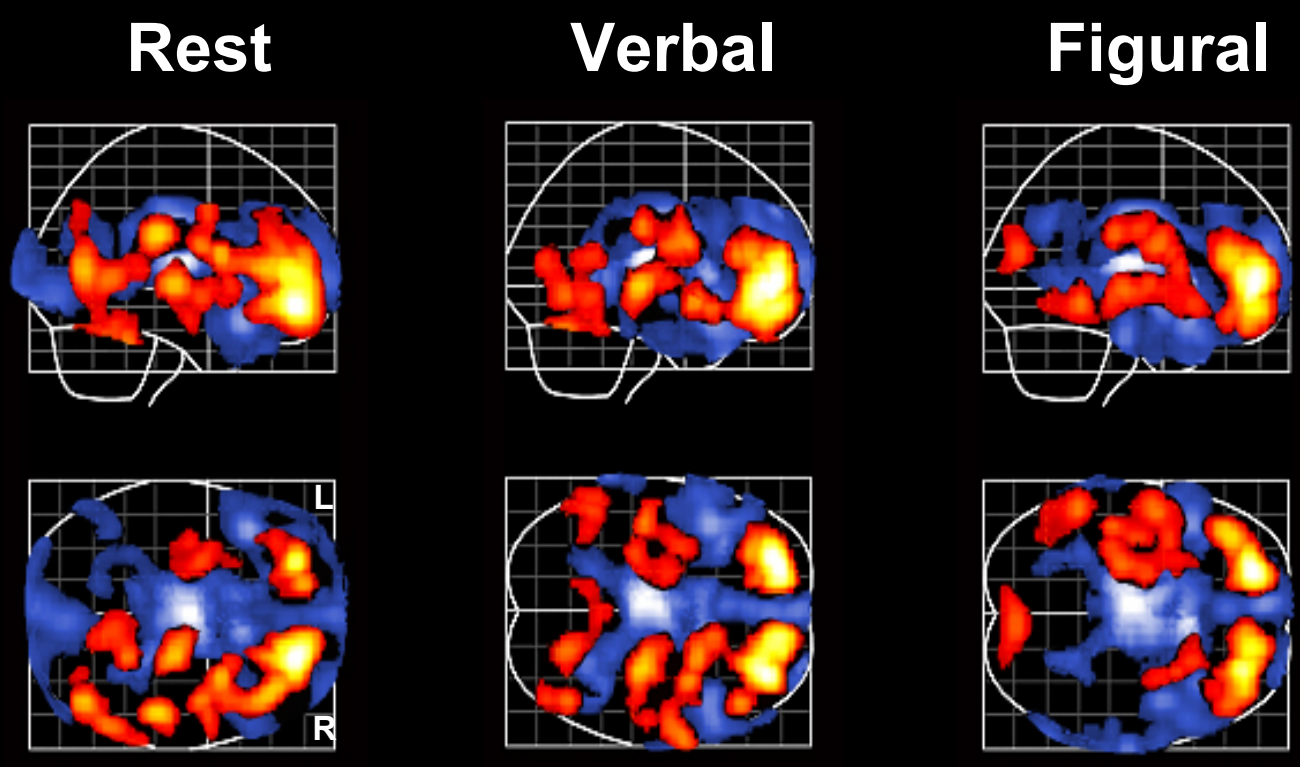


621 Men
532 Women



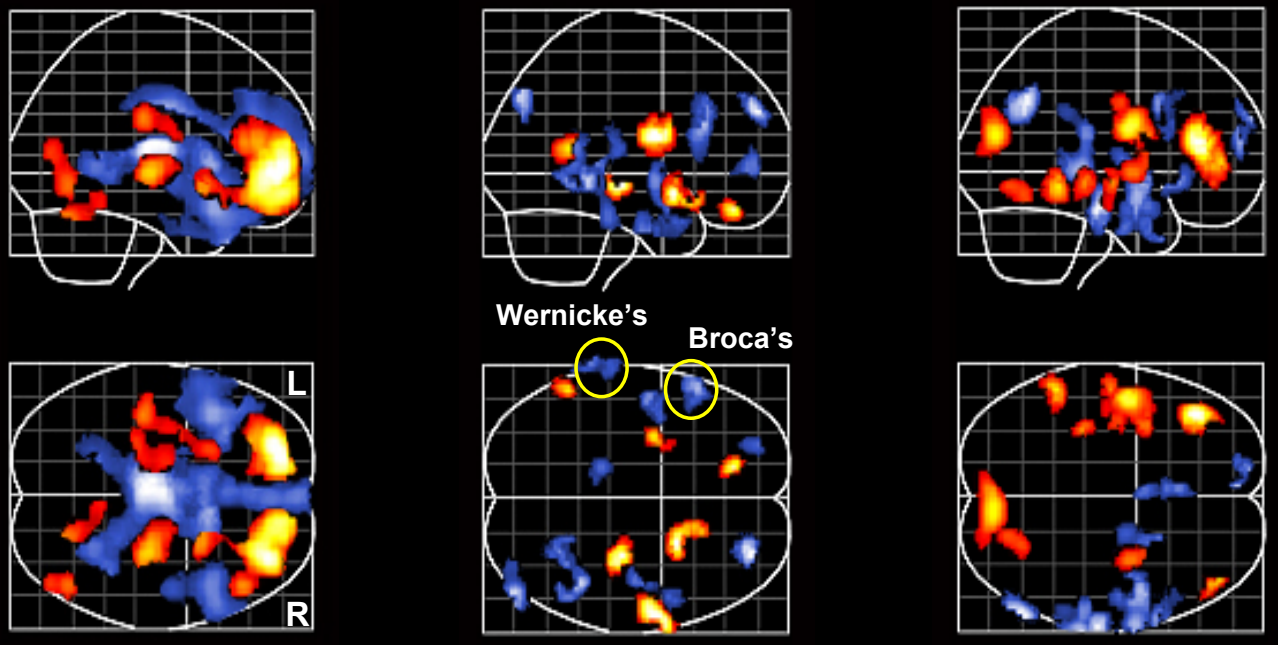
Randomly selected individual trajectories Age>=60, mean = 72.08
85 Men, 52 Women

Longitudinal Changes in rCBF from Year 1 to 9 Beason-Held, et. al. Neurobiol Aging 2008 [epub 2006]



Common and Modality-Specific rCBF Changes from Year 1 to 9

Common Changes **Verbal Specific** **Figural Specific**



Increased Blood Flow
Decreased Blood Flow

Longitudinal ΔrCBF: High vs. Low [^{11}C]PIB Retention Group

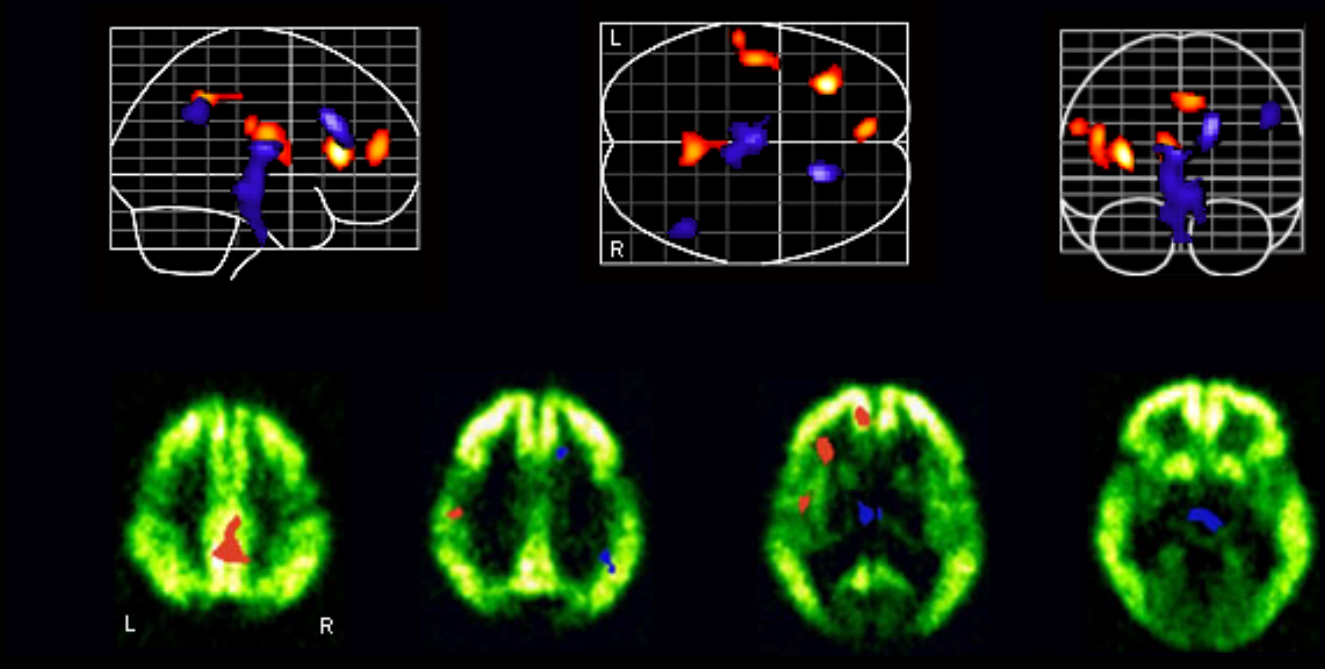
Sojkova et al. J Nucl Med, 2008;49:1465-71

Greater decreases in ΔrCBF

- Anterior/mid cingulate gyrus (R)
- Supramarginal gyrus (R)
- Thalamus (L)
- Midbrain (B)

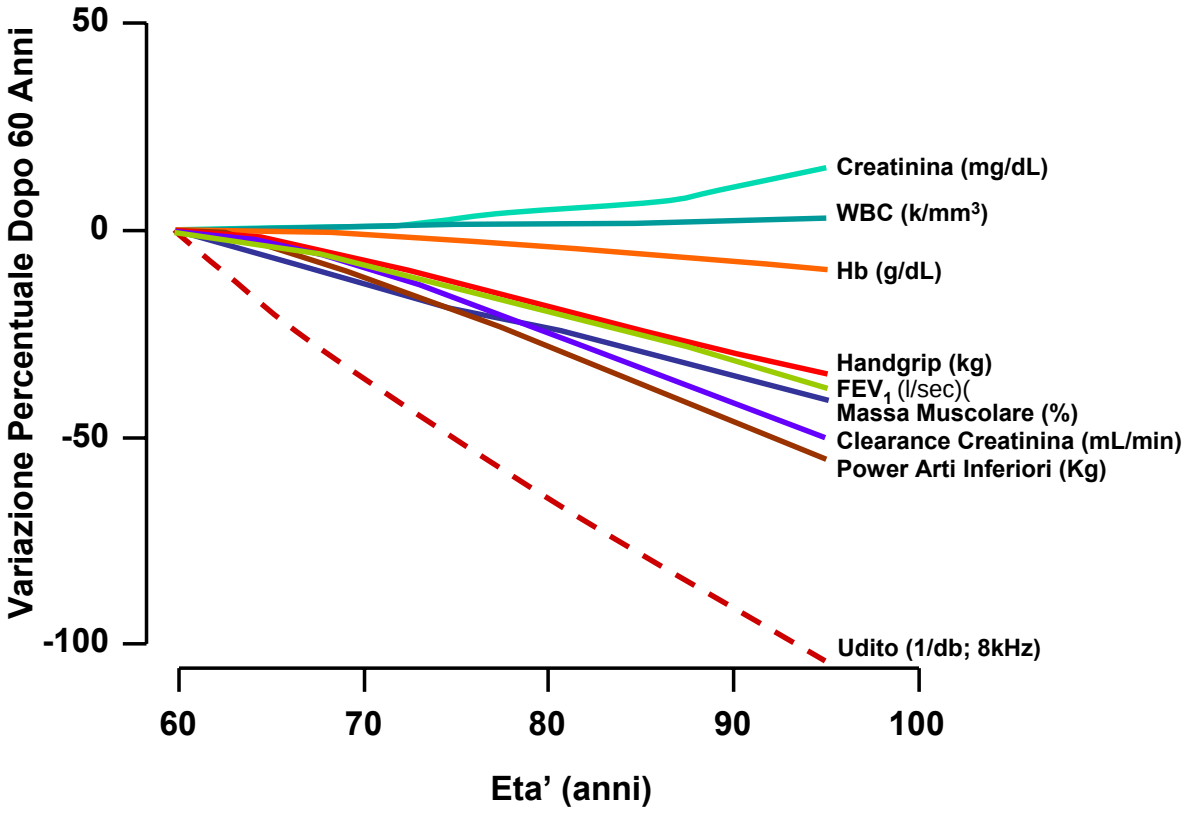
Greater Increases in ΔrCBF

- Precuneus (R)
- Medial and inferior frontal gyrus (L)
- Postcentral gyrus (L)
- Inferior parietal lobule (L)



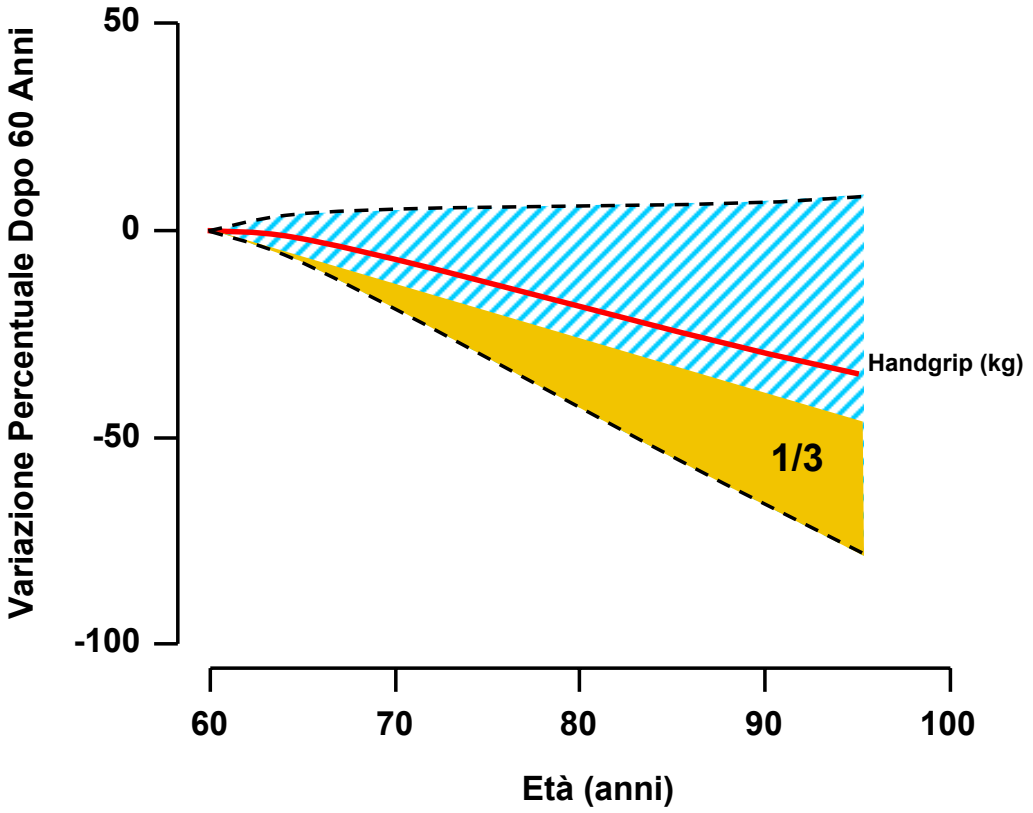
Variazioni Percentuali con l'Invecchiamento di Parametri Fisiologici Multipli (60+)

(BLSA, n=184, Valutazioni=2757)



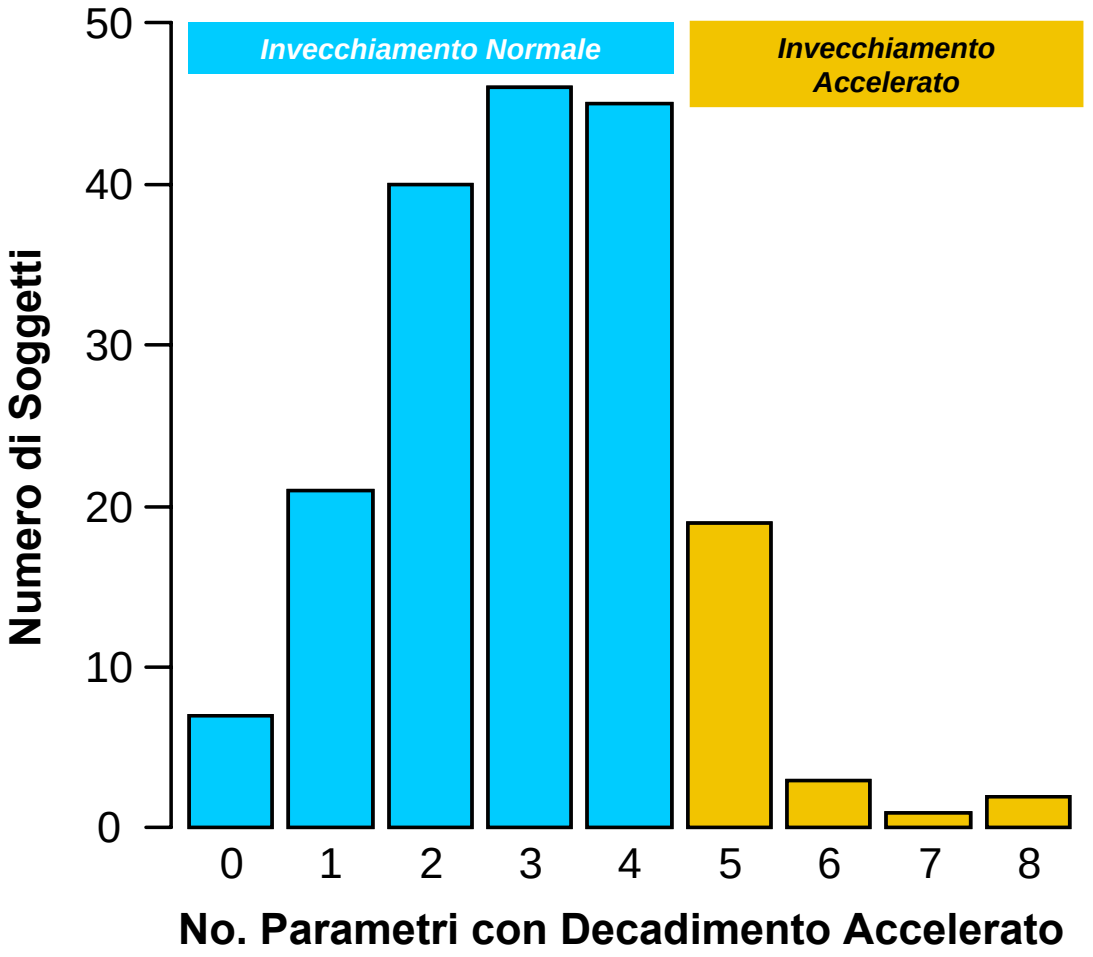
Variazione Percentuale Handgrip con l'Invecchiamento (60+)

(Schematic example)



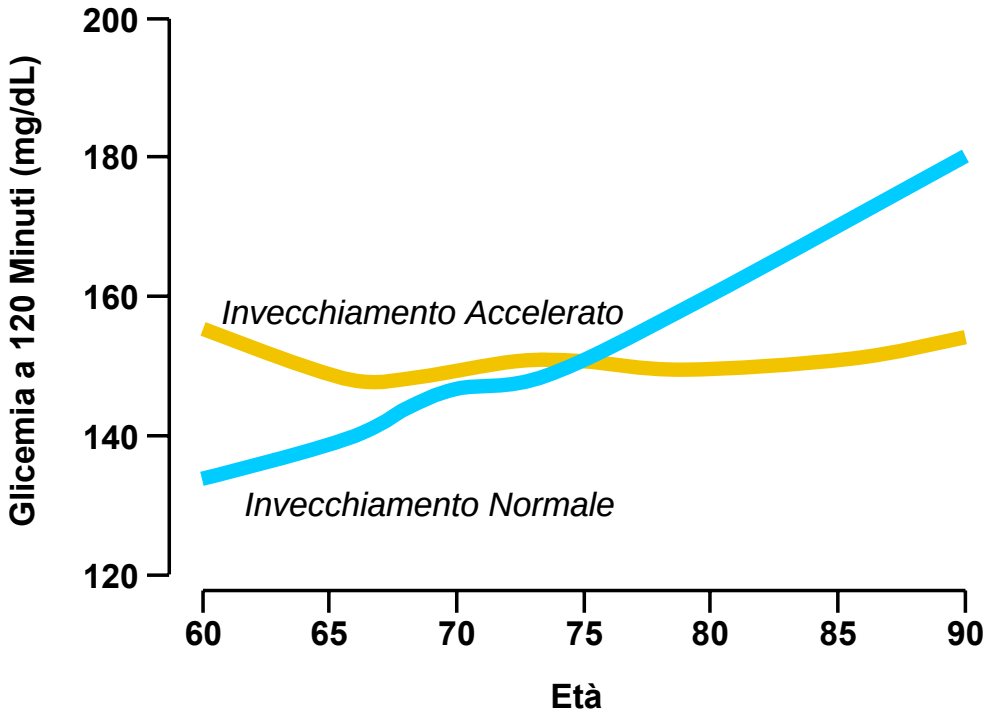
No. Partecipanti in Funzione del Numero di Parametri Fisiologici con Decadimento Accelerato

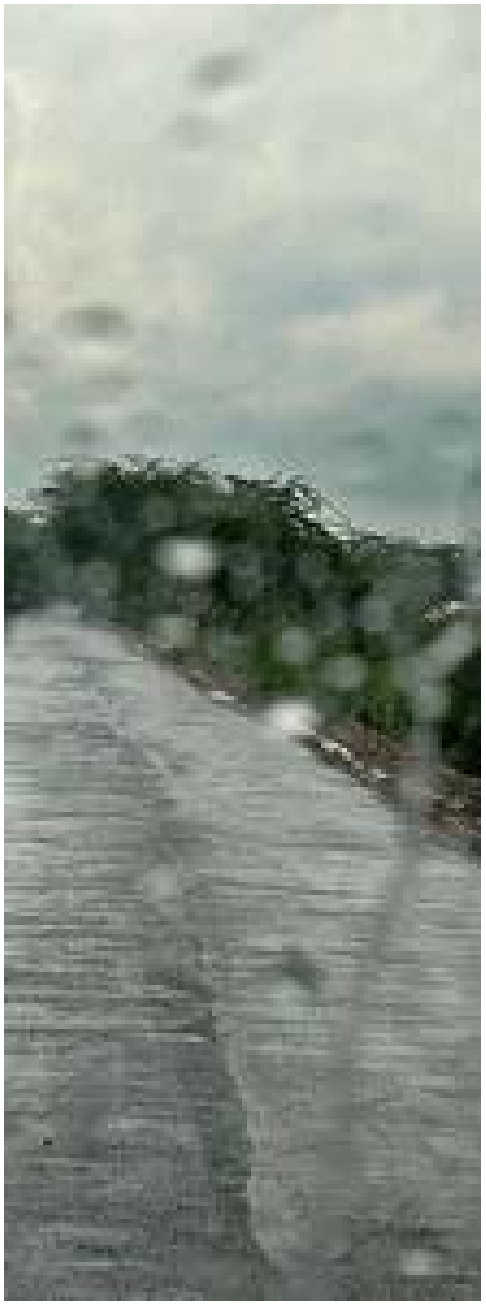
(BLSA, n=184, Visits=2757)



Variazioni Longitudinali della Glicemia 120 min dopo Carico di Glucosio in Soggetti con Invecchiamento Normale ed Accelerato

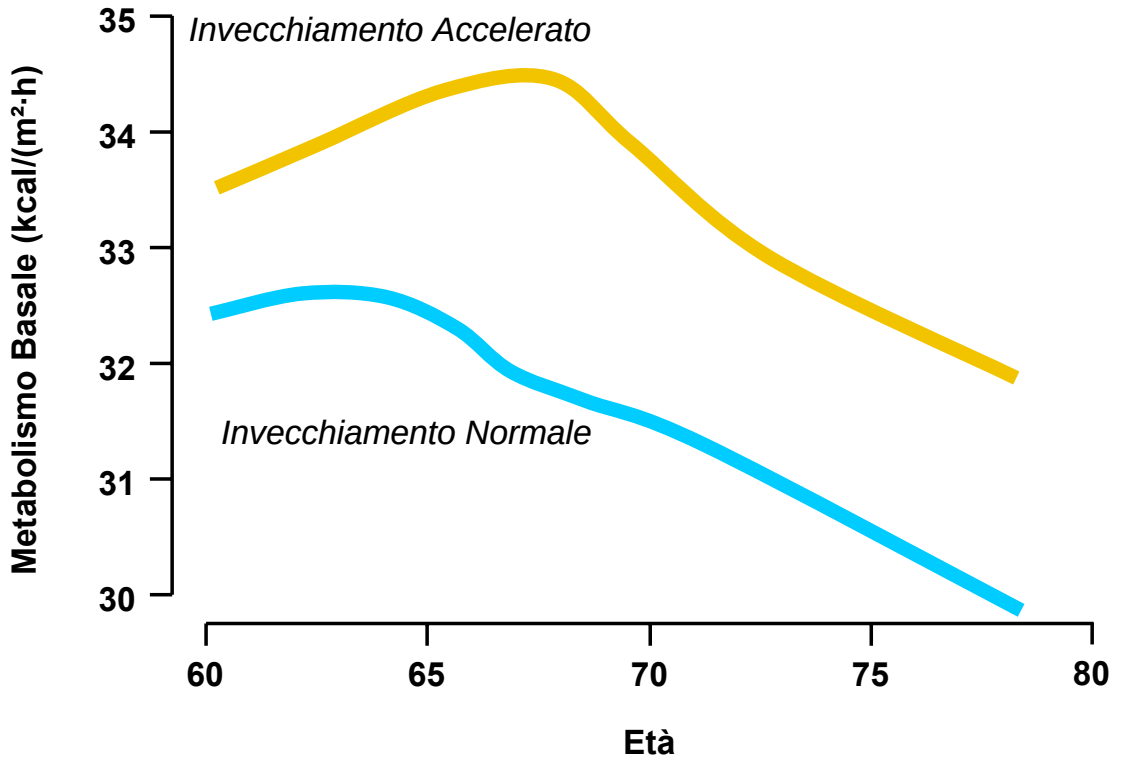
(BLSA, n=184, Visits=2757)



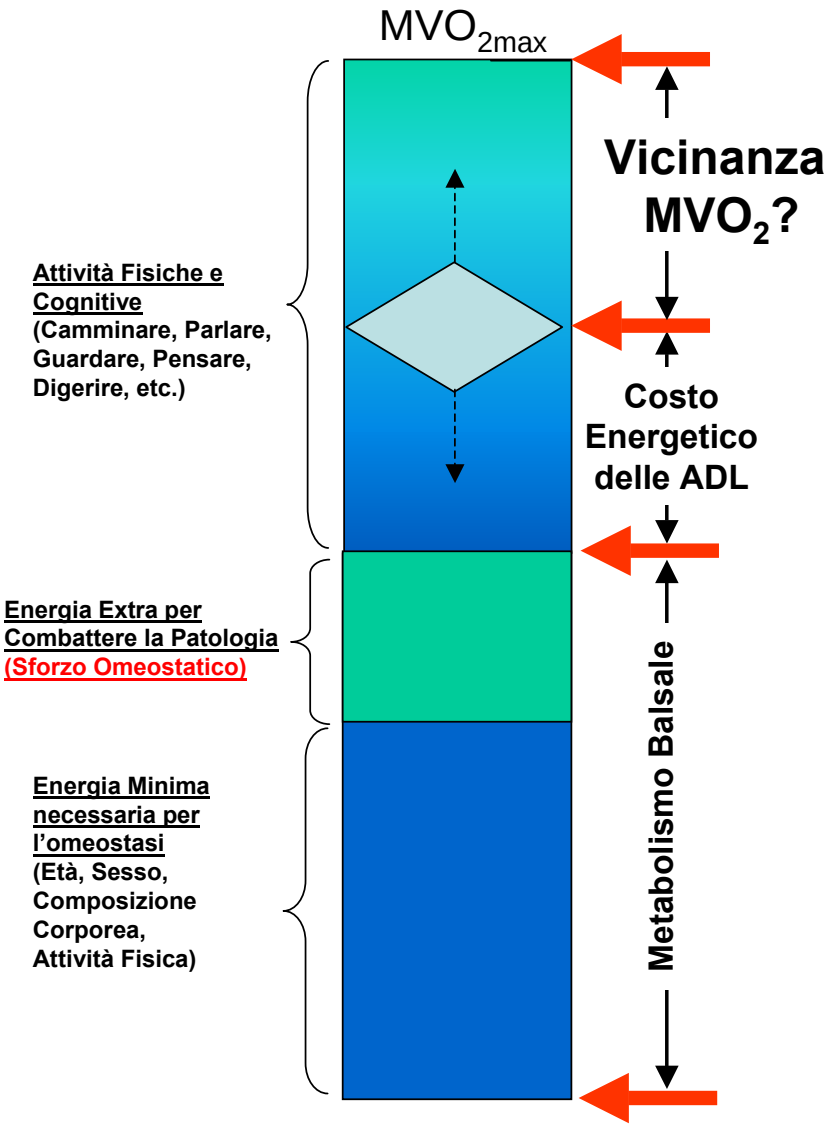


Variazioni Longitudinali del Metabolismo Basale in Soggetti con Invecchiamento Accelerato e Normale

(BLSA, n=184, Visits=2757)



Modello di Fragilità Energetica



Fatica

Distanza tra costo energetico delle ADL e limiti dell'energia disponibile?

La relazione reciproca dipende da tre fattori:

1.$MVO_{2\ max}$
2. Metabolismo Basale (MB)
3. Costo Energetico delle ADL (CEA)
(Efficienza=1/CEA)

MVO_{2max} inversamente correlato alla **Fatica**
MB direttamente correlato alla **Fatica**
Efficienza direttamente correlata alla **Fatica**

+ modulazione della componente percettiva (infiammazione, depressione etc.).

High Basal Metabolic Rate Is a Risk Factor for Mortality: The Baltimore Longitudinal Study of Aging

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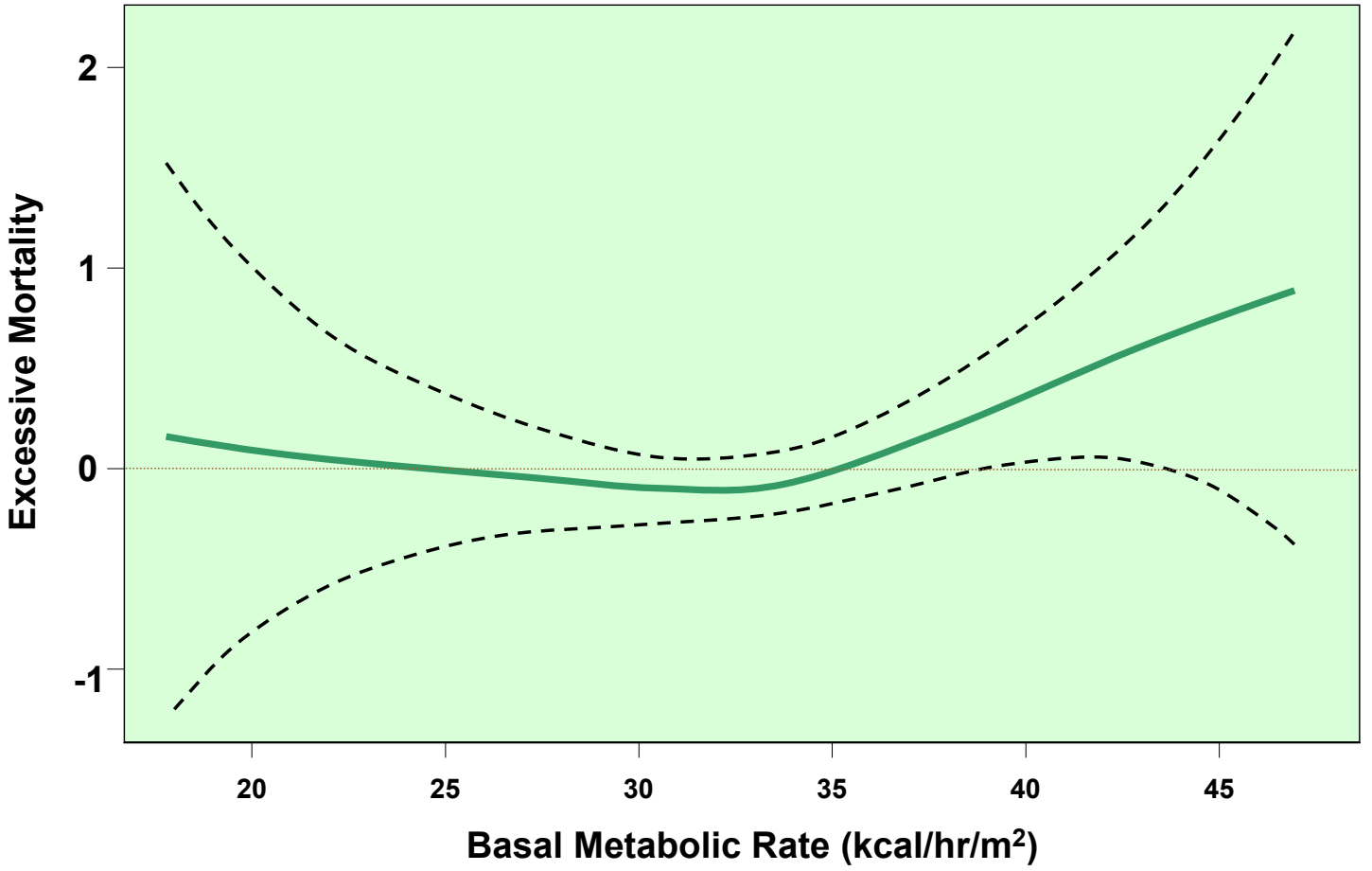

Journal of Gerontology: MEDICAL SCIENCES
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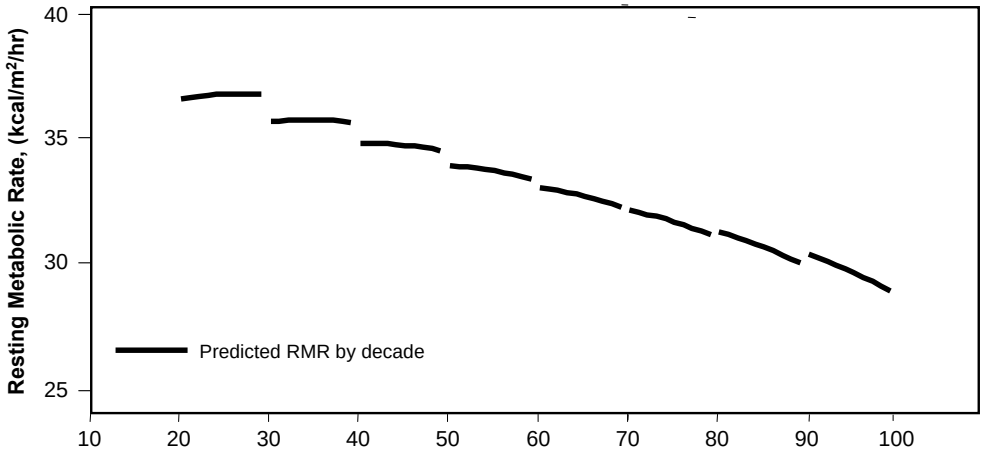

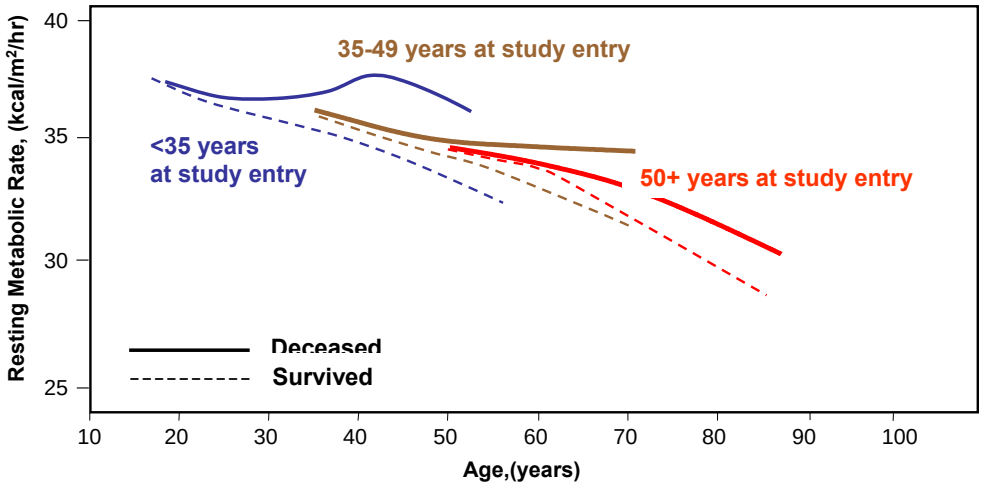

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