



Prevention, Health & Longevity

Éric BOULANGER
Medicine and Biology of Aging
Lille University, France

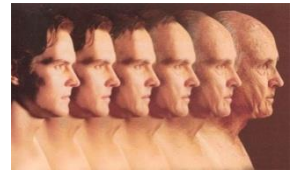


Charleroi, 1 October 1st 2019

Finding / situation



We do not all age at the same rate

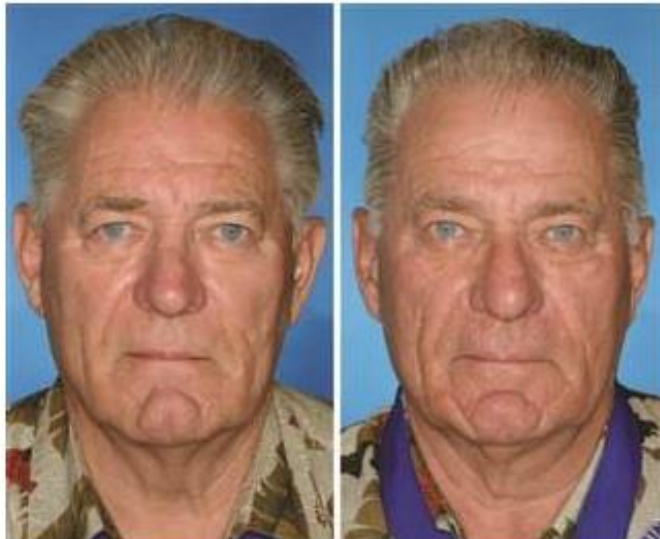


Genetic factors

Environnemental factors

Pathologies

┌ **Tabac** ───────────┐



Longevity

Human maximal longevity

Jeanne Calment = 122 years, 5 months et 14 days



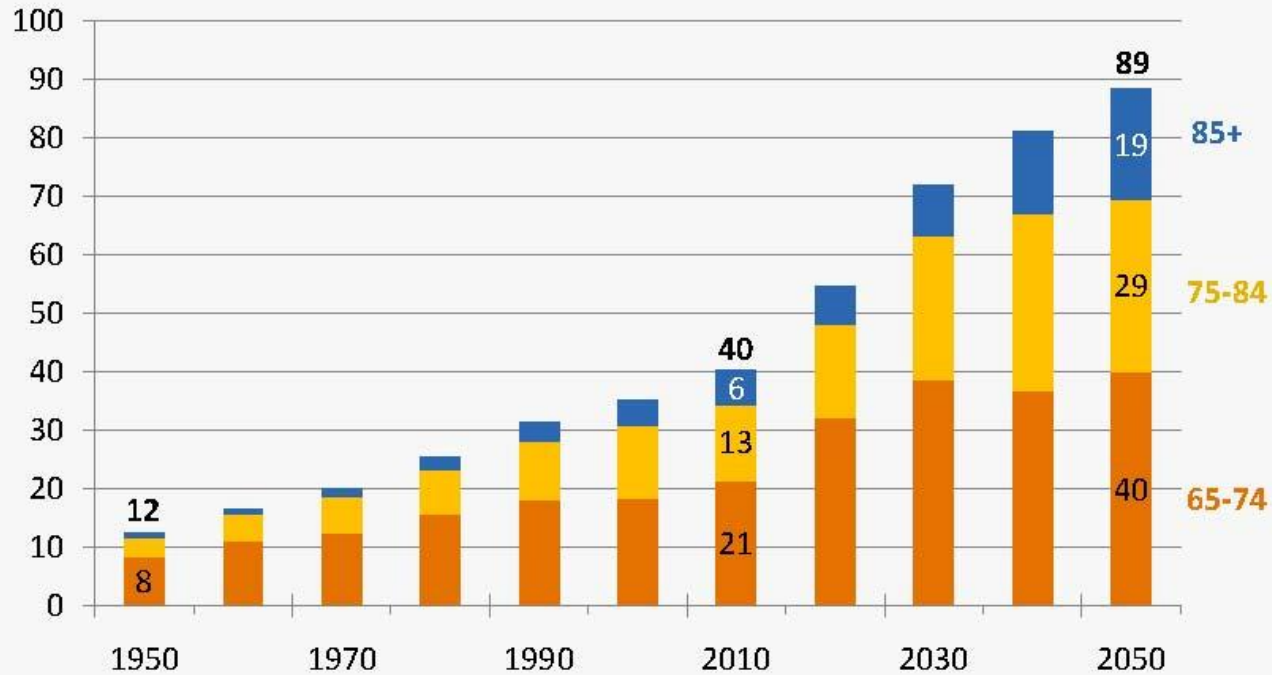
?

Aging population

Not the number but the proportion of elders

As the boomers reach 65, then 75, then 85, the population in each age bracket will swell; the age mix of the old will shift upward.

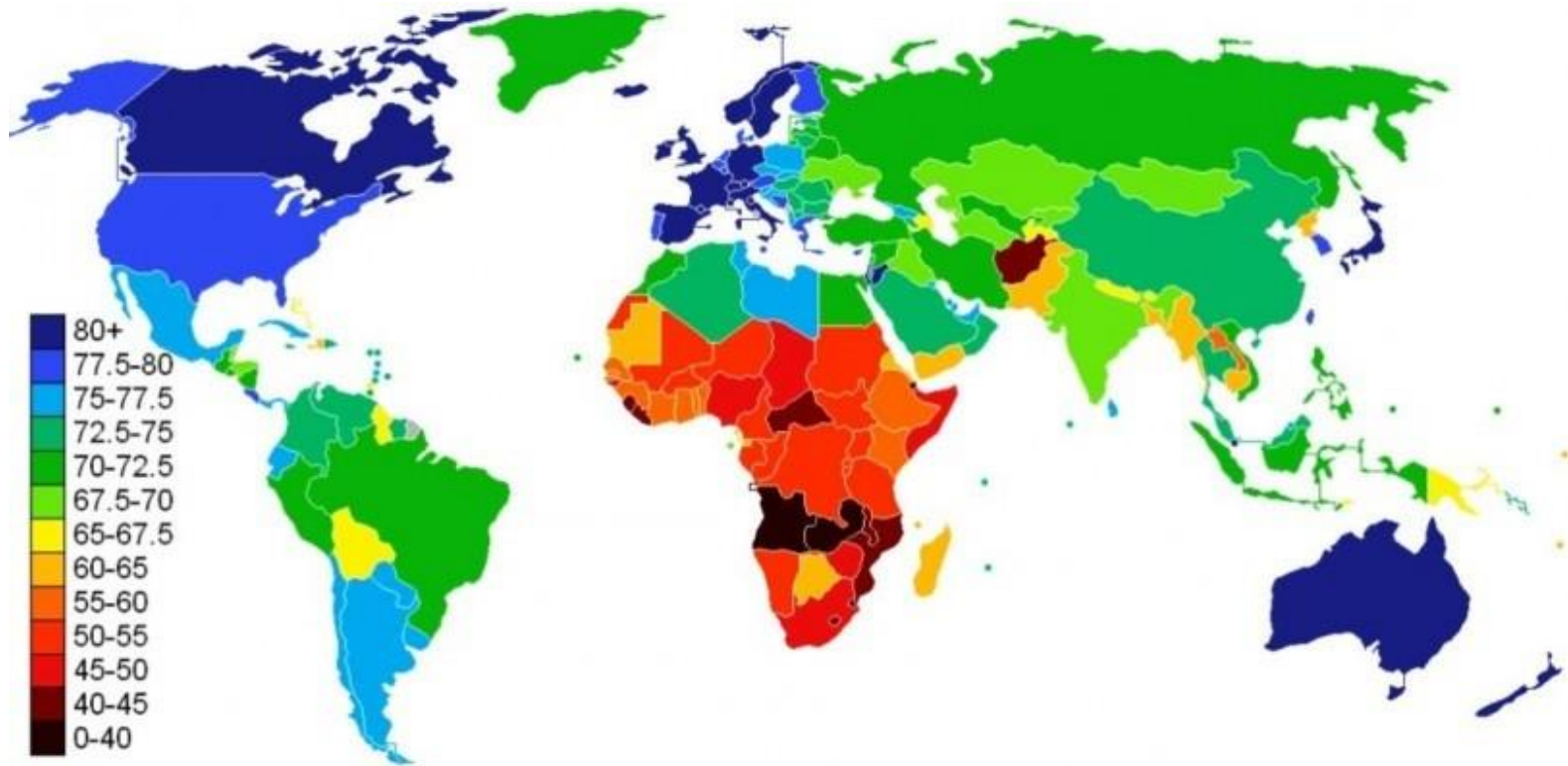
Population 65+, millions



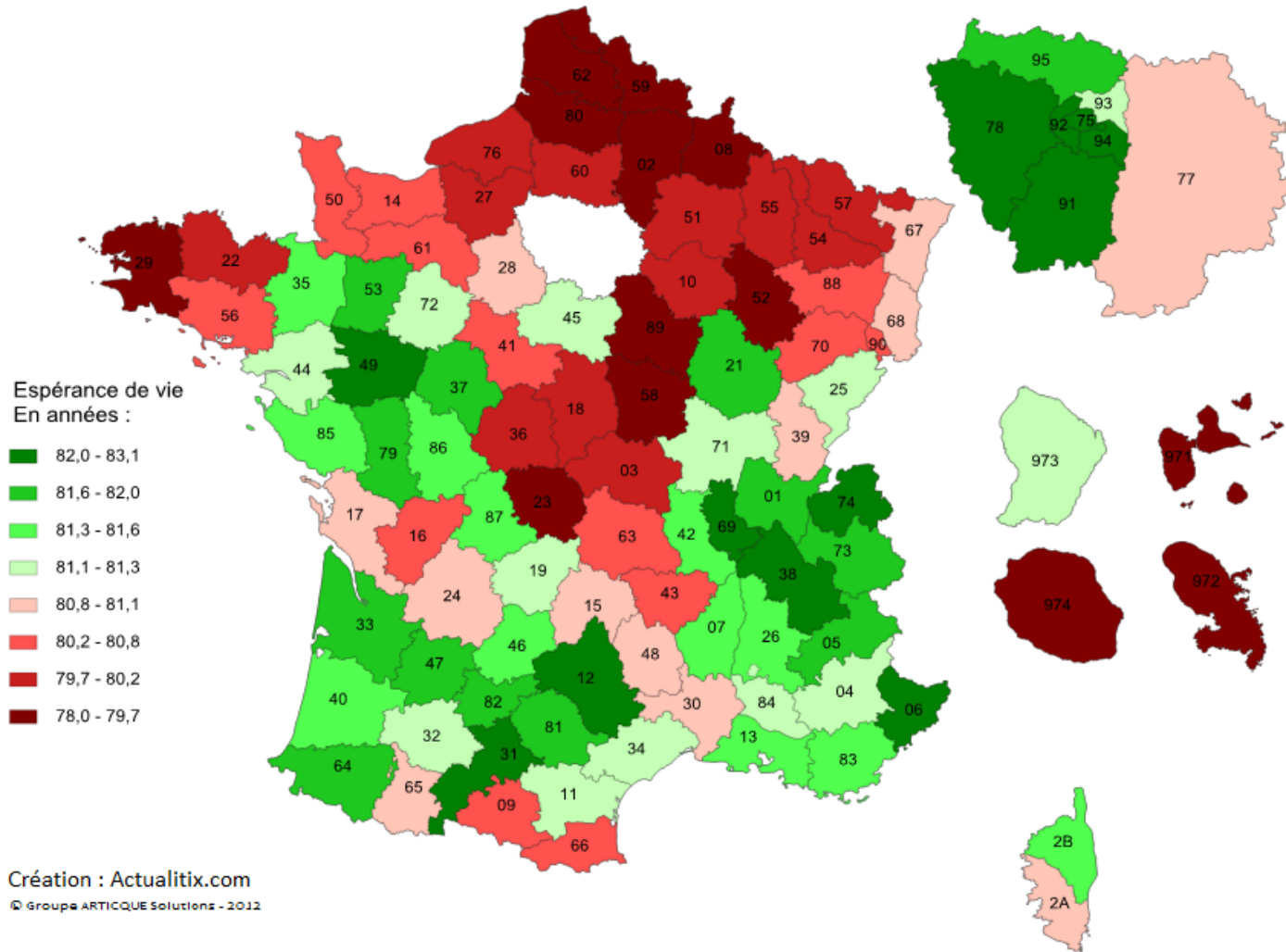
Source: U.S. Census Bureau, 2002b and 2008d.

A-8
Stanford Center on Longevity

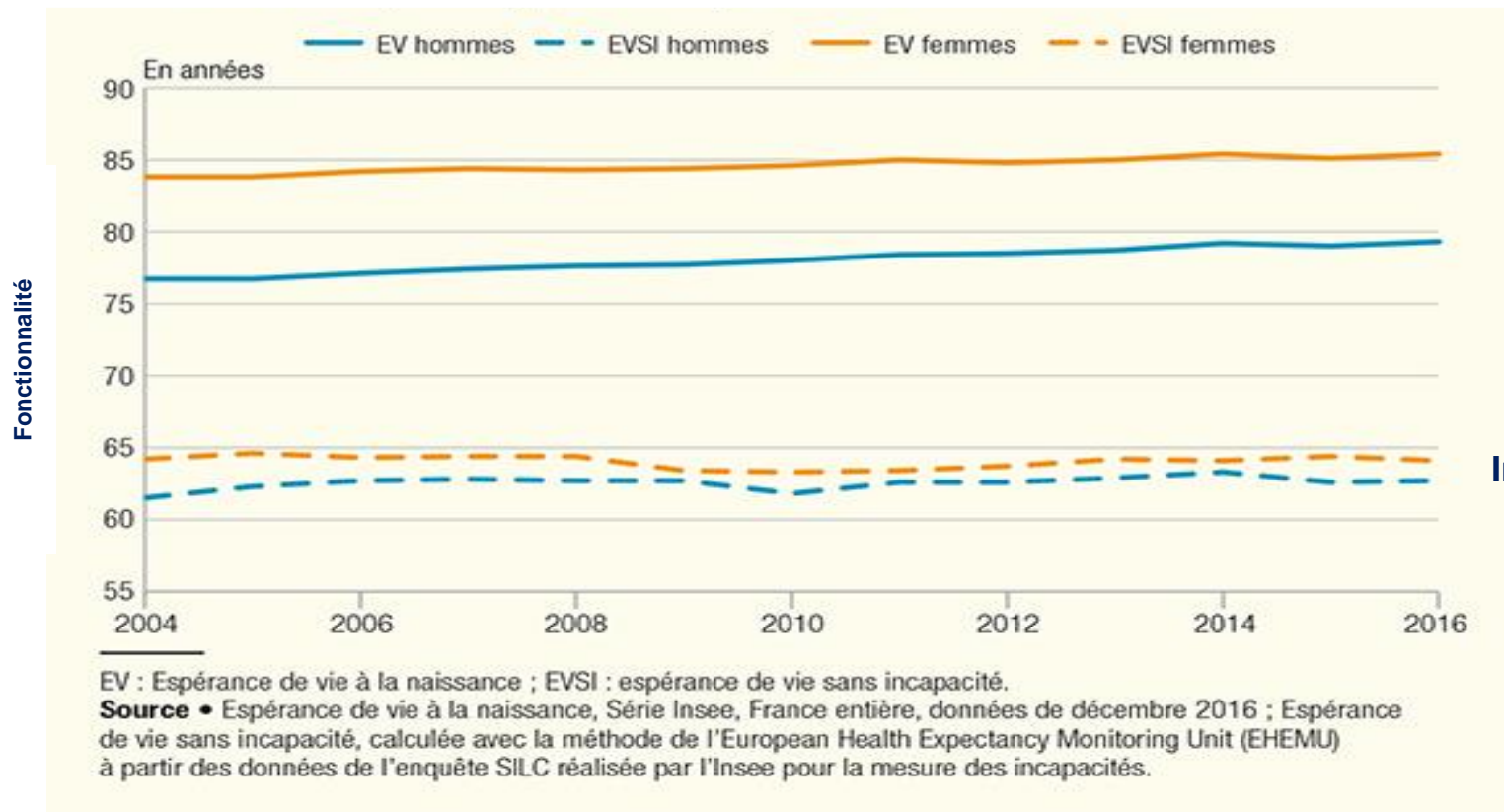
Lifespan in the world



Lifespan France



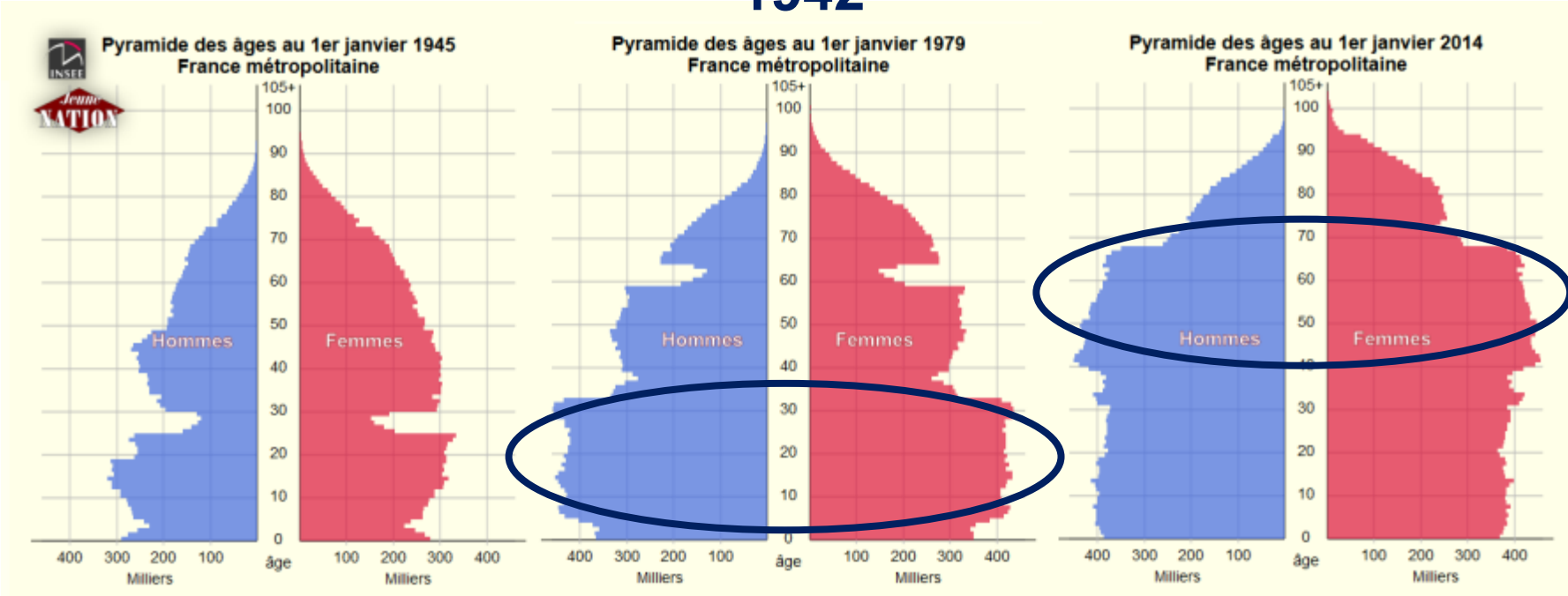
Bad lifespan in good health in France



From baby-boom to papy-boom

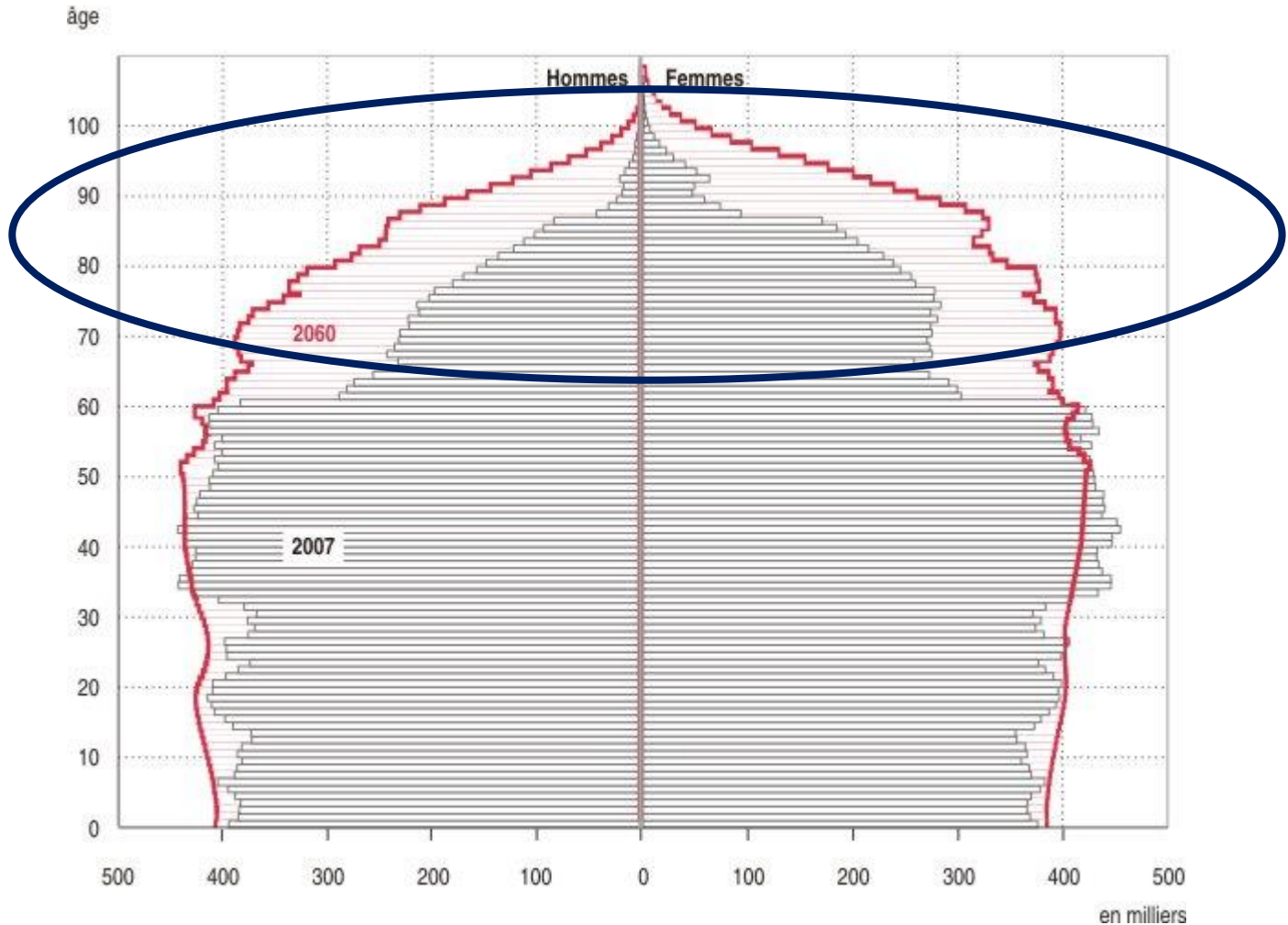
Baby-boom 1942

Papy-boom

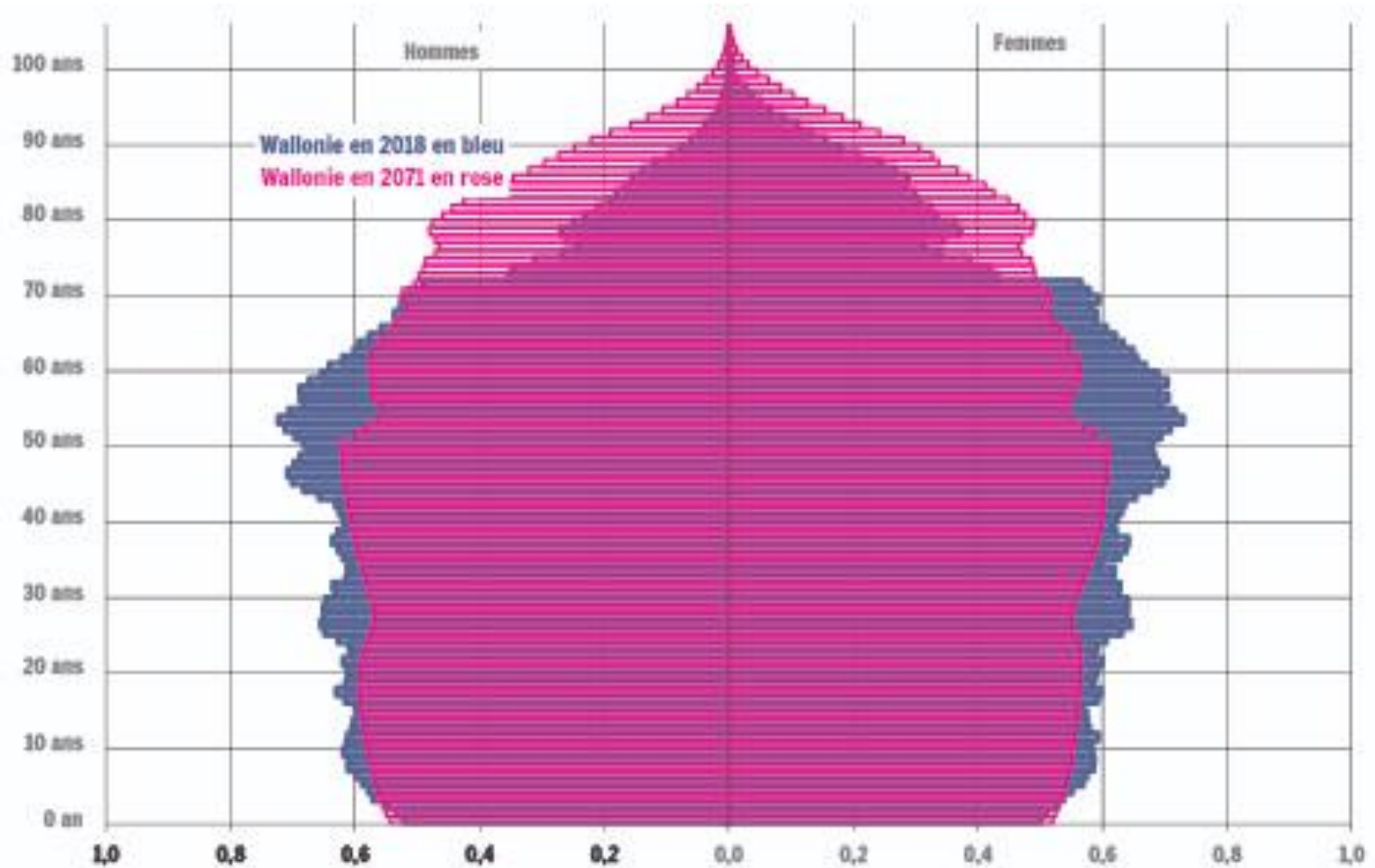


Projection in France 2060

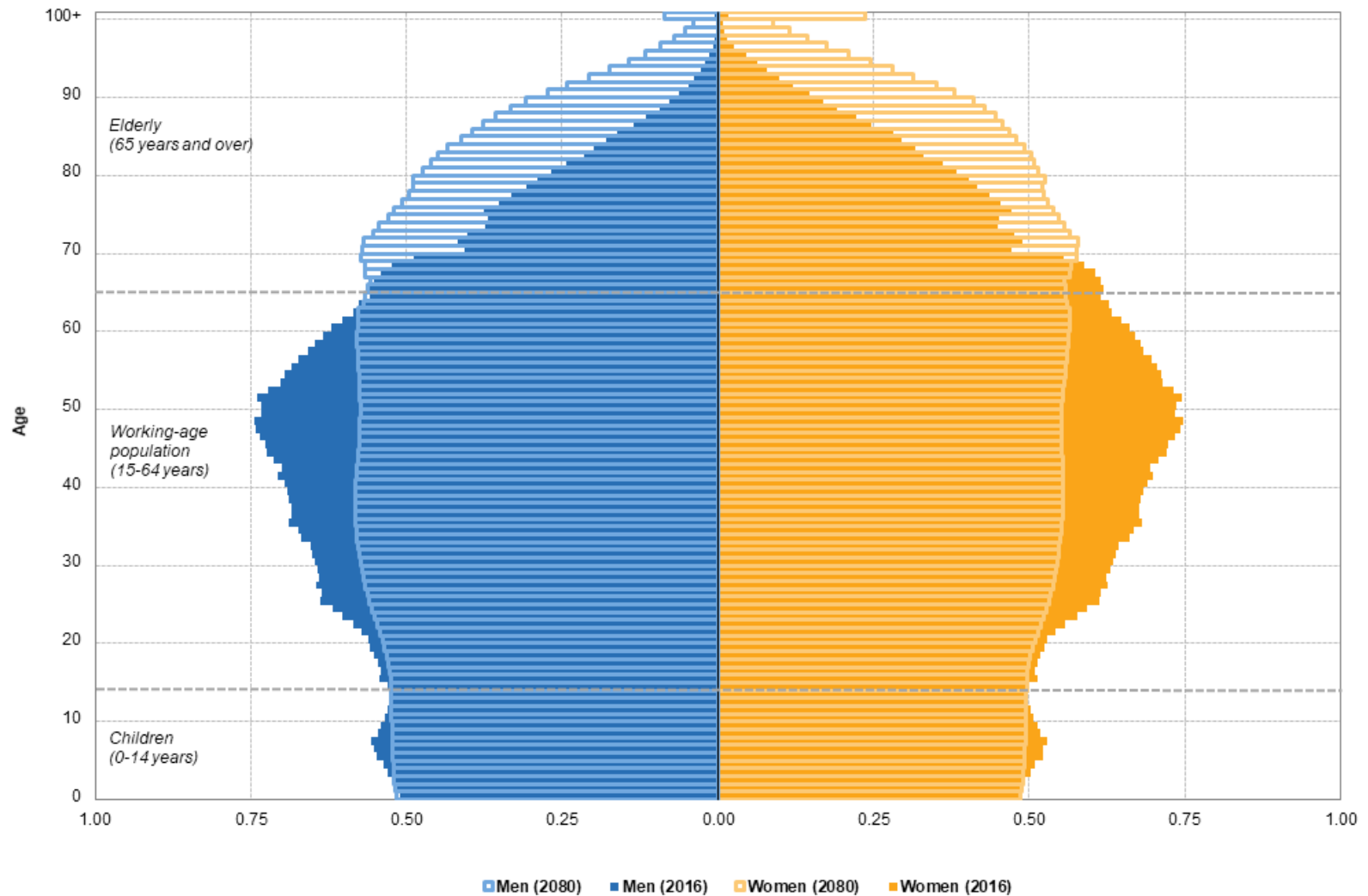
Geriatric-boom started in 2017



Projection in Wallonie in 2071



Projection in EU in 2080

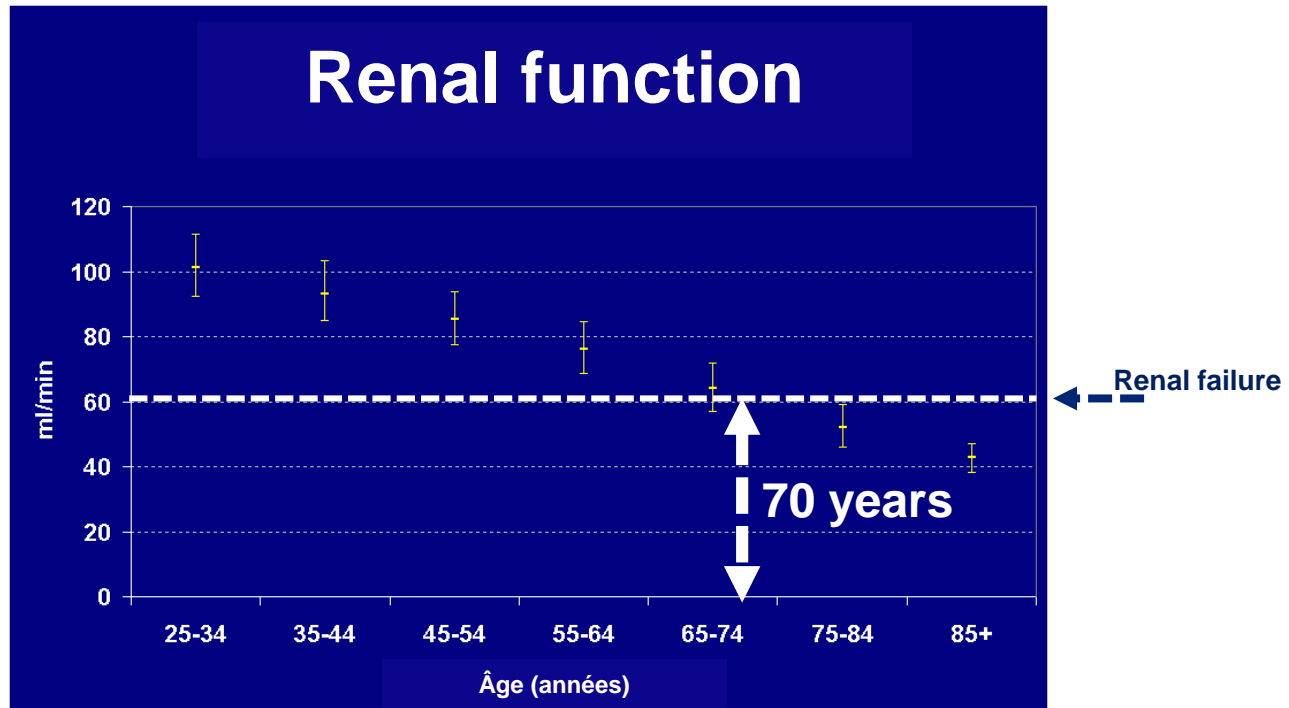


Note: 2016, estimates. 2080: projections.

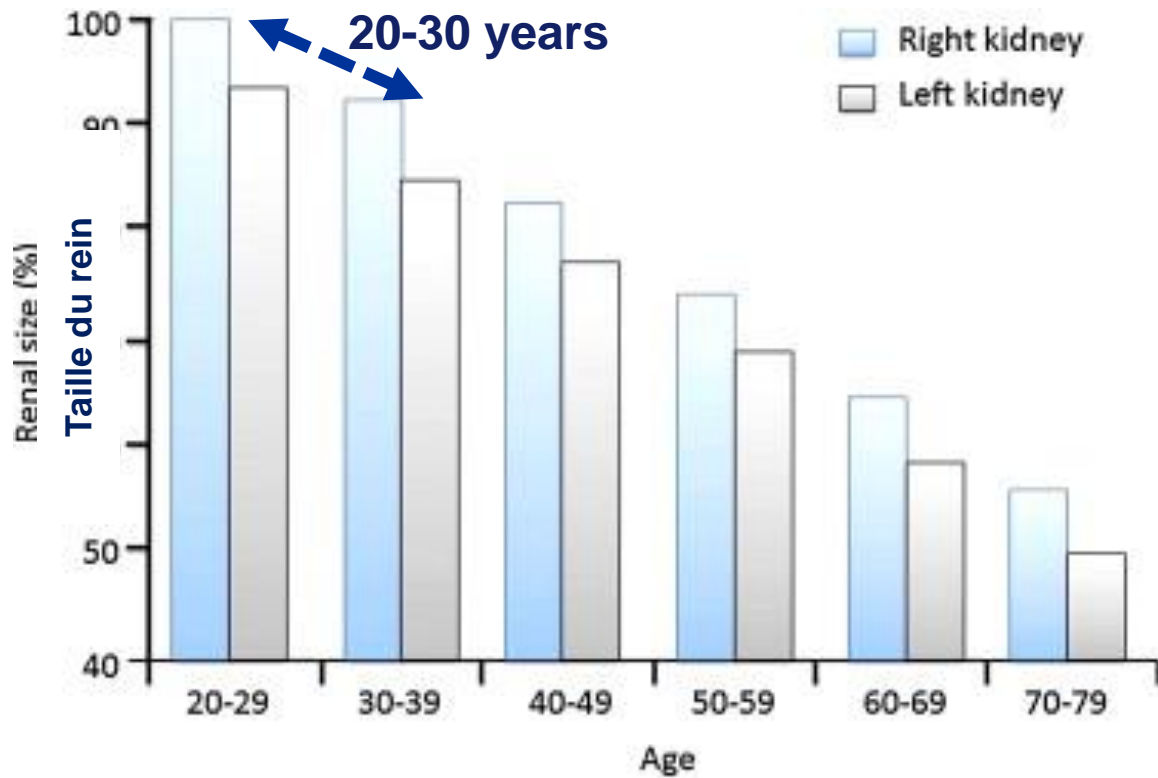
Source: Eurostat (online data codes: demo_pjan and proj_15npms)

When do we start to age?

Renal aging

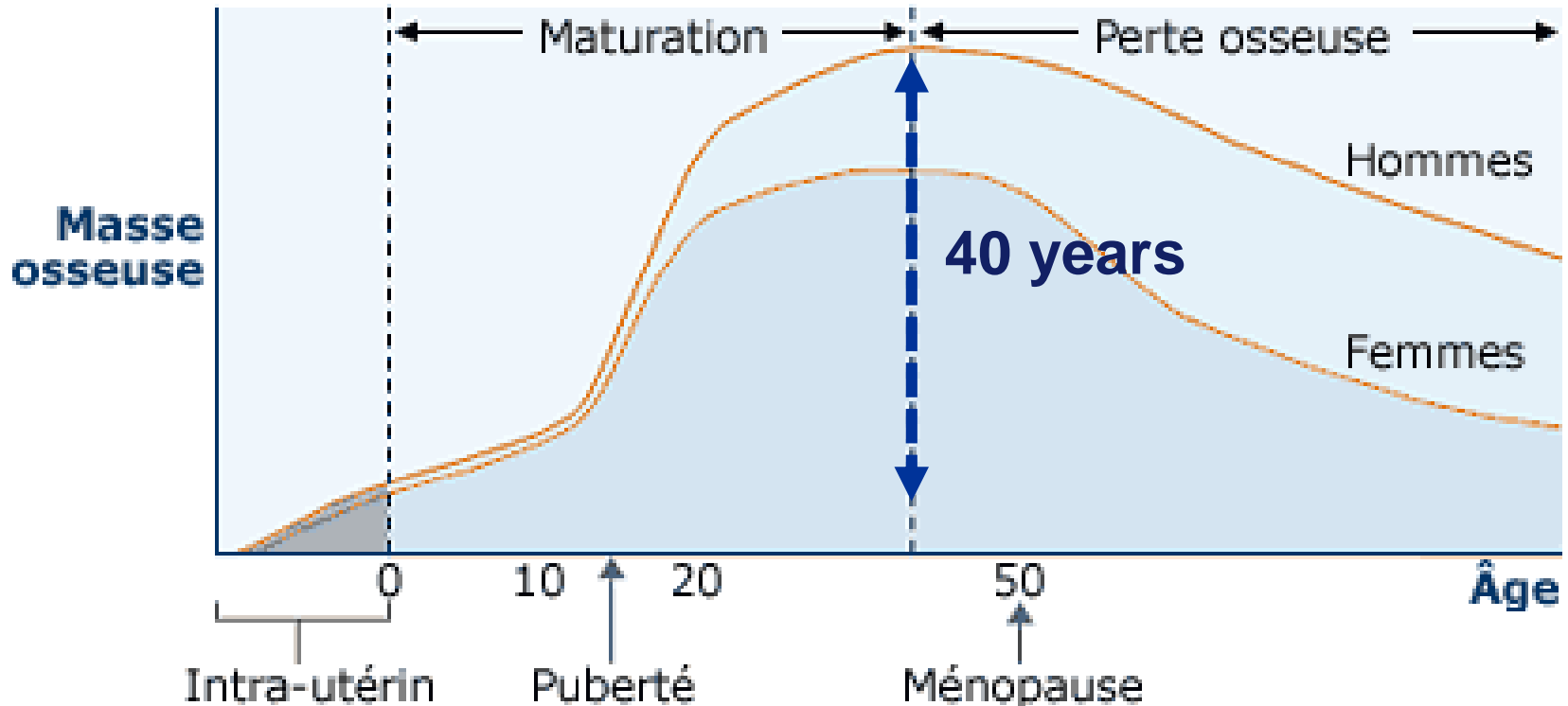


Renal aging



Bone aging

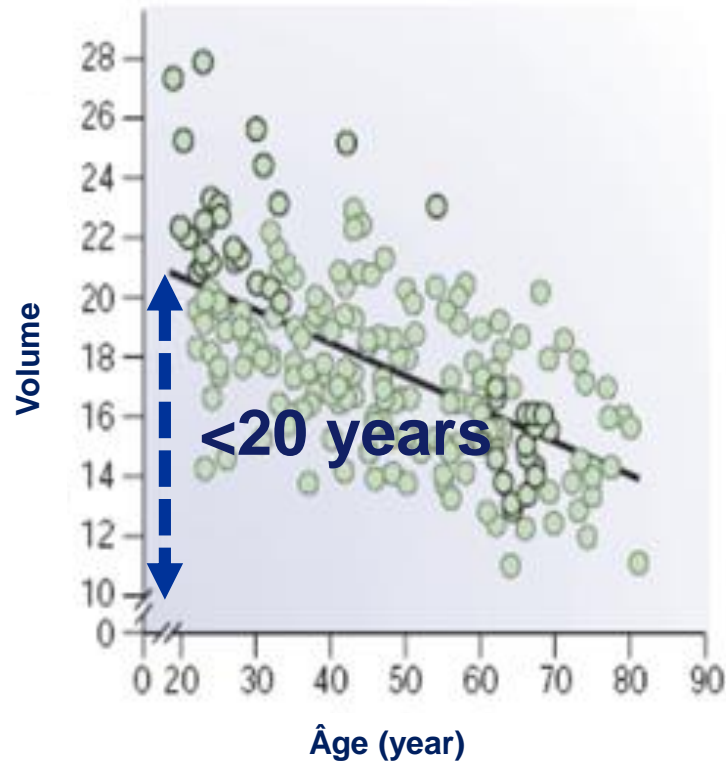
Évolution de la masse osseuse au cours de la vie



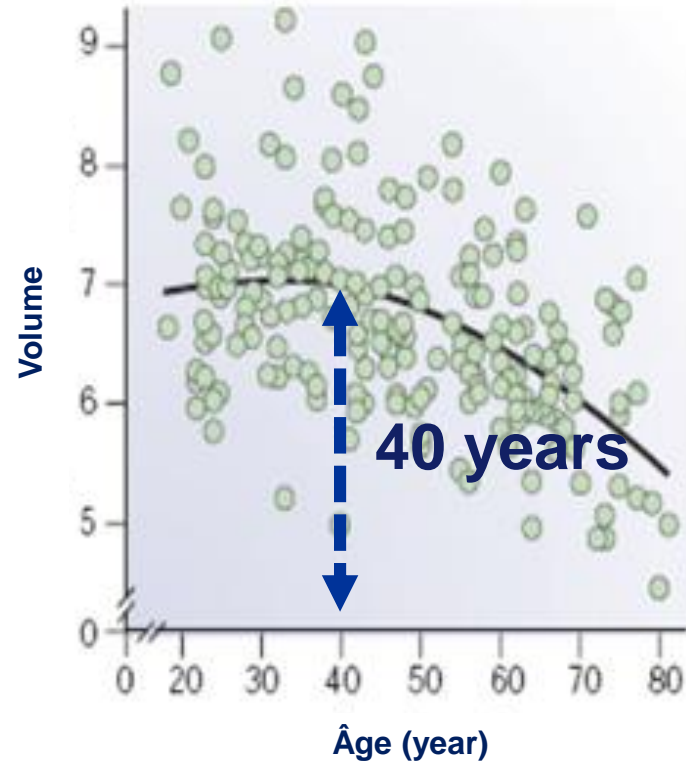
Graphique adapté de : Fordham J. *Osteoporosis : Your Questions Answered*, Churchill Livingstone, Angleterre, 2004, p. 48.

Brain aging Volume

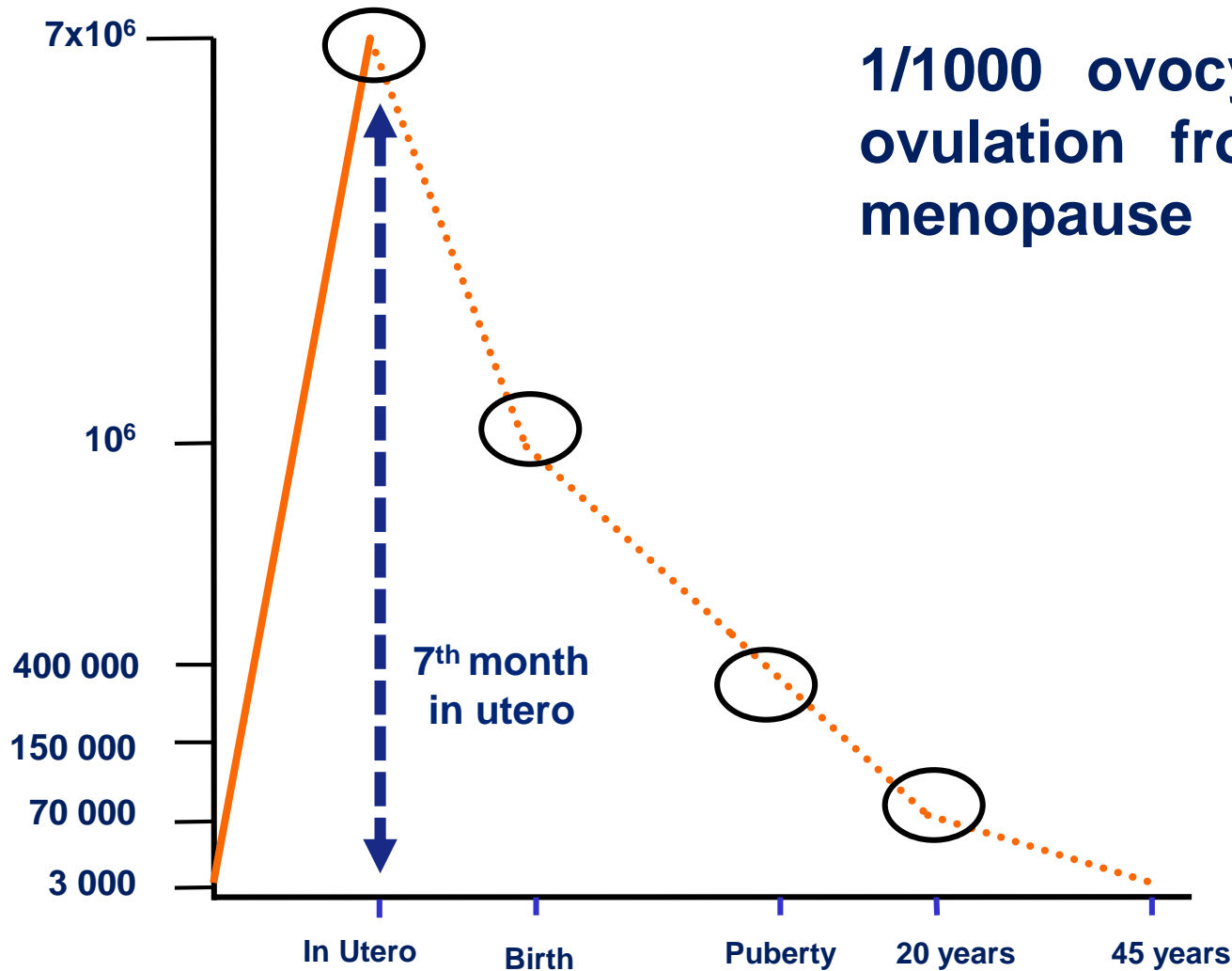
Cortex latéral préfrontal



Hippocampes



Aging and reproduction



1/1000 ovocyte will go to ovulation from puberty to menopause



Les « 1000 premiers jours de vie » Une fenêtre d'opportunité pour notre santé future

Work package 1

« Réduire l'exposition
aux toxiques
pour la santé »

*Réduire l'exposition aux
toxiques environnementaux
durant les 1000 premiers
jours de vie*

Work package 2

« Mode de vie
pour la santé »

*Comment notre mode de
vie - nutrition, activité
physique, allaitement -
préserve notre santé future*

Work package 3

« Bien-être
pour la santé »

*Le bien-être au cours des 1000
premiers jours de vie pour
promouvoir notre qualité
de vie future*

De la
recherche
vers la
société

WP4 – « Prévention pour la santé »

*Un programme d'éducation à la santé pour prévenir
les maladies non transmissibles de l'adulte*

WP5 – « Education pour la santé »

*De nouveaux outils d'enseignement et de la recherche pédagogique pour diffuser
les connaissances sur les origines développementales de la santé*

Do not confound

Diseases that the frequency increases with age

Age IS associated to well-known other risk factors (today)

- **Cancer : tobacco, alcohol, sun**
- **Stroke, Myocardial Infraction: HTA, diabetes, Dyslipemia**
- ...

Diseases directly related to age

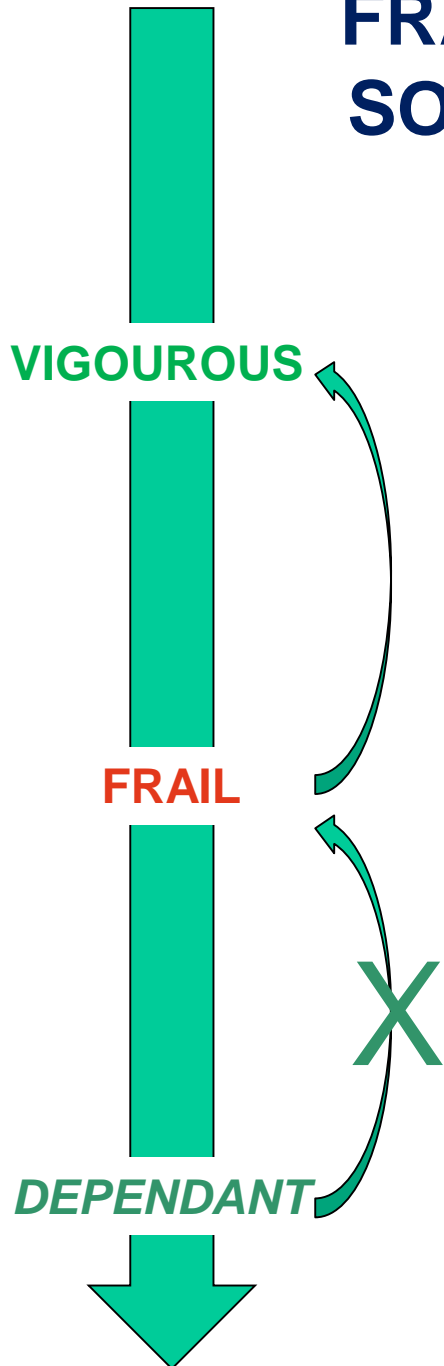
**Age IS NOT associated to other risk factors
Age IS the main risk factor (today)**

- **Macular Degeneration**
- **Alzheimer Disease**
- **Parkinson Disease**
- ...

THE LIFE ... and the its last steps



FRAILITY = REVERSIBLE SOCIETAL CHALLENGE



Successful aging
Halette THOMSON
92 years



Need to change for more prevention

in

- **Teaching and education**
- **Screening**

Need to change for more prevention

in

- **Teaching and education**
- **Screening**

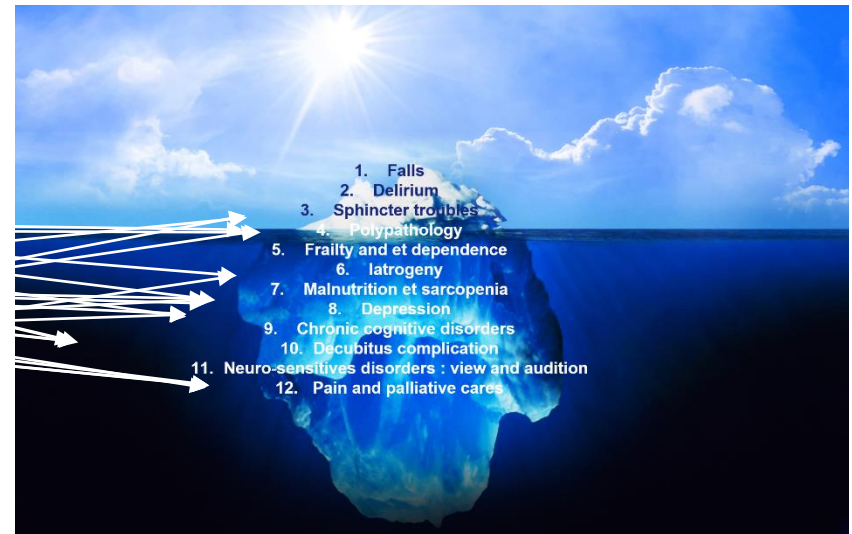
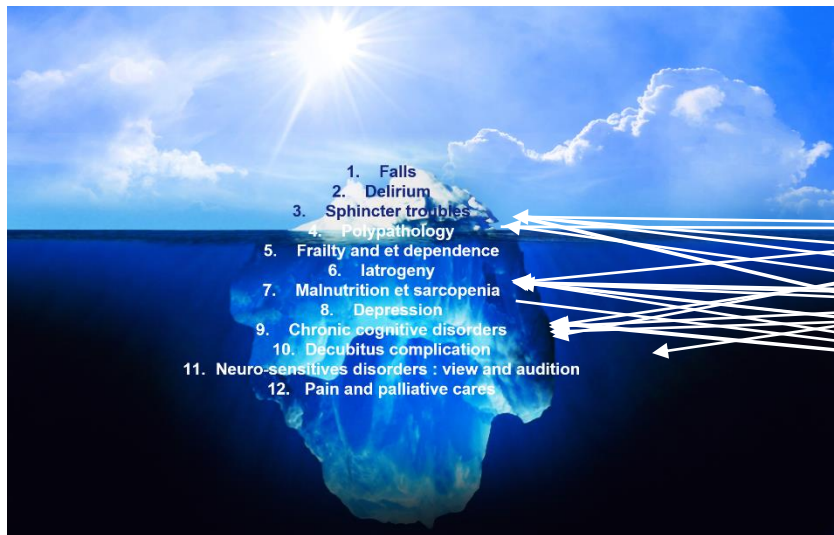
Geriatric Syndromes for teaching

- 1. Polypathology**
- 2. Frailty and dependence**
- 3. Iatrogeny**
- 4. Malnutrition et sarcopenia**
- 5. Depression**
- 6. Delirium**
- 7. Chronic cognitive disorders**
- 8. Walk & equilibrium dysfunctions, Falls**
- 9. Decubitus complication**
- 10. Sphincter troubles**
- 11. Neuro-sensitives disorders : vision and audition**
- 12. Pain and palliative cares**

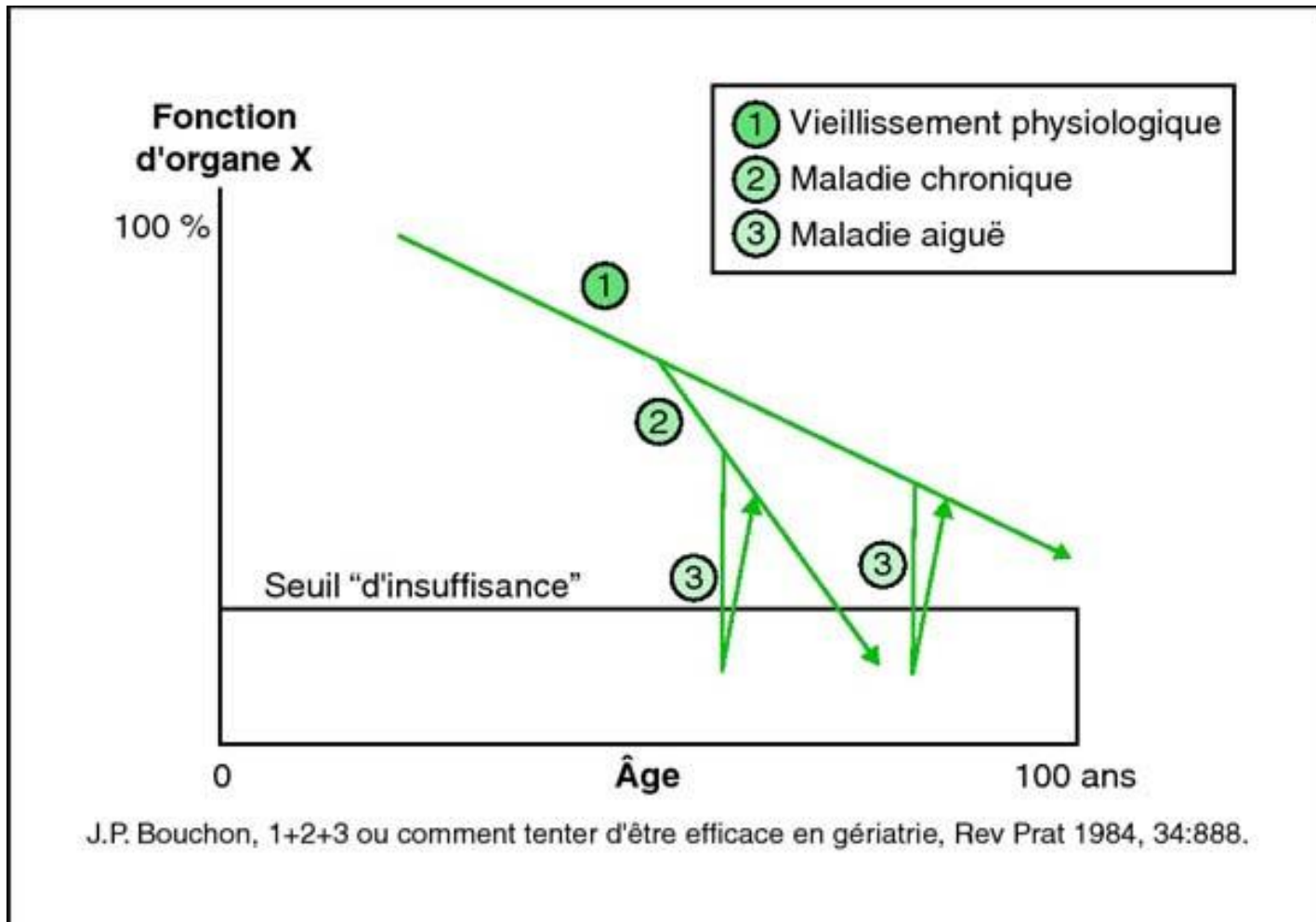
Global approach of 12 Geriatric Syndromes Evaluated by Standard Geriatric Evaluation

- 
- 1. Falls**
 - 2. Delirium**
 - 3. Sphincter troubles**
 - 4. Polypathology**
 - 5. Frailty and dependence**
 - 6. Iatrogeny**
 - 7. Malnutrition & sarcopenia**
 - 8. Depression**
 - 9. Chronic cognitive disorders**
 - 10. Decubitus complication**
 - 11. Neuro-sensitives disorders : vision and audition**
 - 12. Pain and palliative cares**

1 geriatric syndrome can hide others



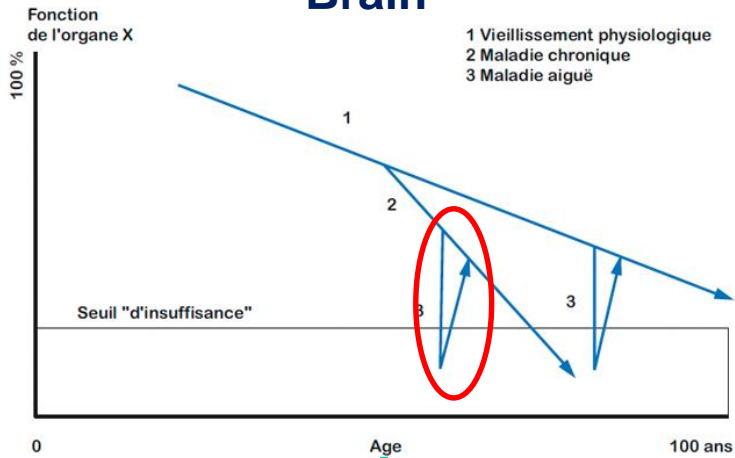
1+2+3 JP BOUCHON model



**Have a +3 without a known +2 = a chance?
An alarm?**

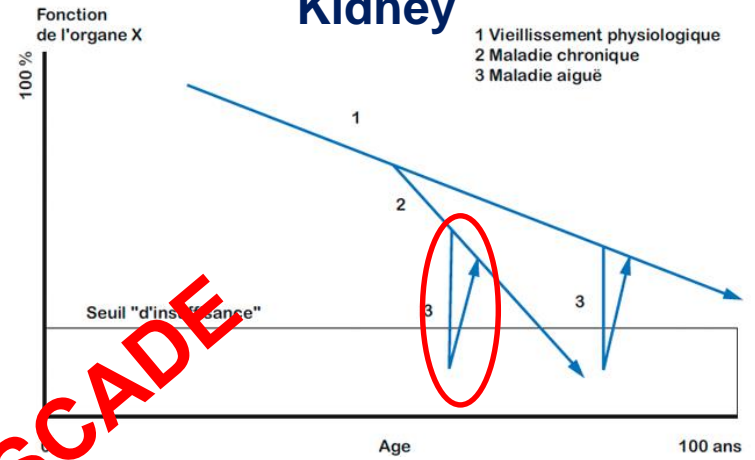
Delirium³ / Dementia²

Brain



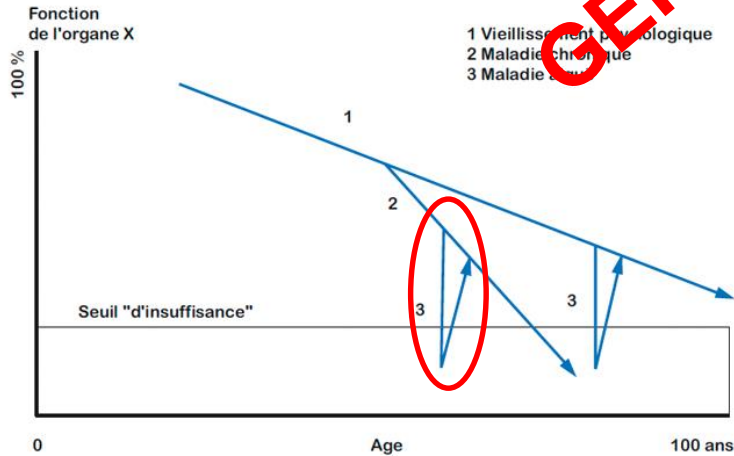
Acute Renal Failure³ / CRF²

Kidney



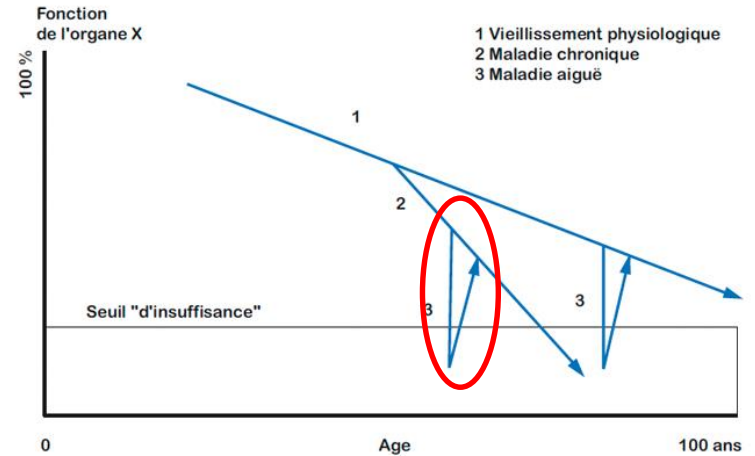
Acute Heart Failure³ / CHF²

Heart



Fracture³ / Osteoporosis²

Bone



GERIATRIC CASCADE

Frial phenotype from Fried et al.

FP criteria	Measurement
Weakness	Grip strength: lowest 20% (by sex, body mass index)
Slowness	Walking time/15 feet: slowest 20% (by sex, height)
Low level of physical activity	Kcal/week: lowest 20% Males: 383 Kcal/week Females: 270 Kcal/week
Exhaustion; poor endurance	"Exhaustion" (self-report)
Weight loss	>10 lb lost unintentionally in prior year



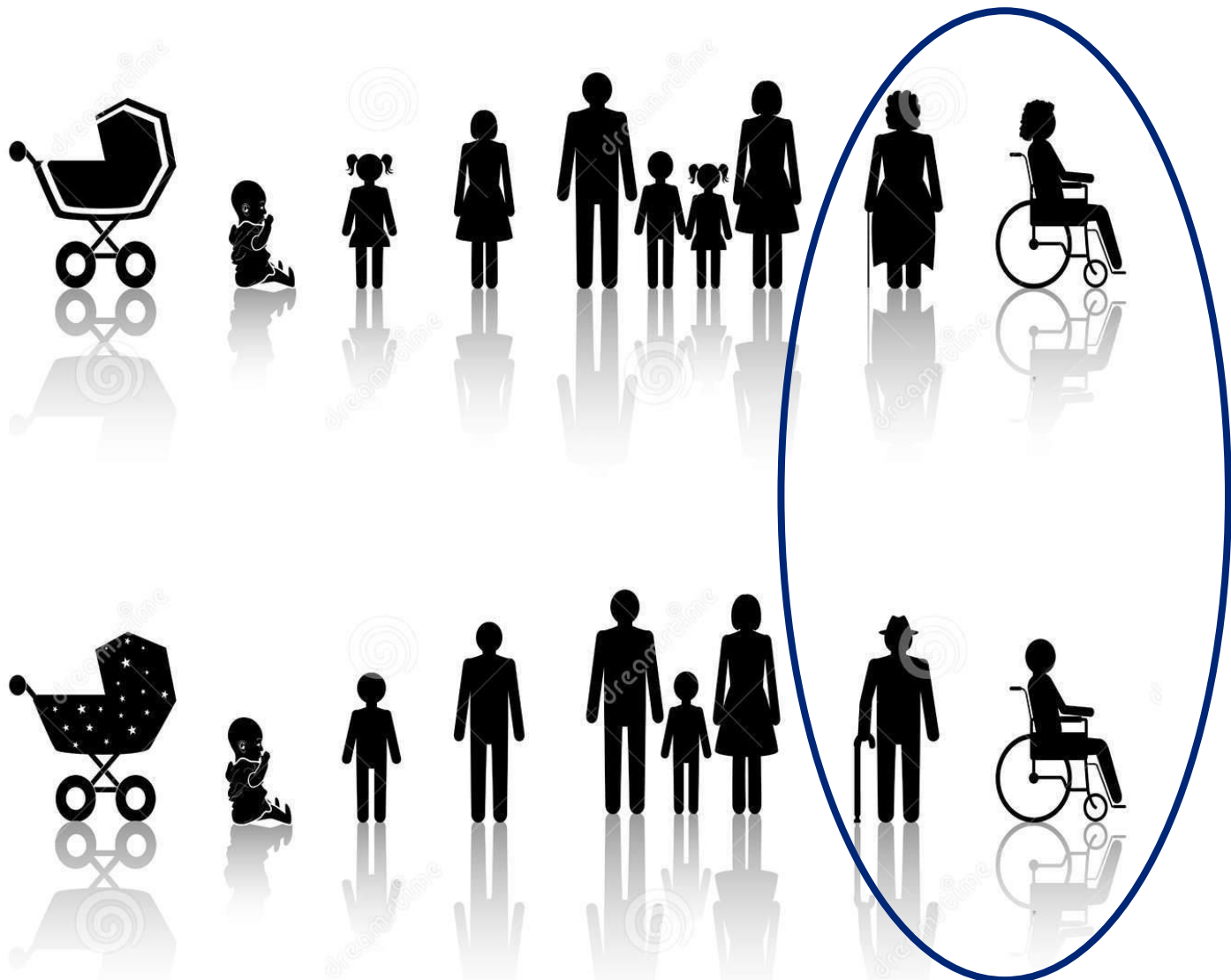
3 or more = Frail
1 or 2 = Pre-frail
0 = Non frail

Need to change for more prevention

in

- **Teaching and education**
- **Screening**

And if that was the past ?



ACTIVE AGING

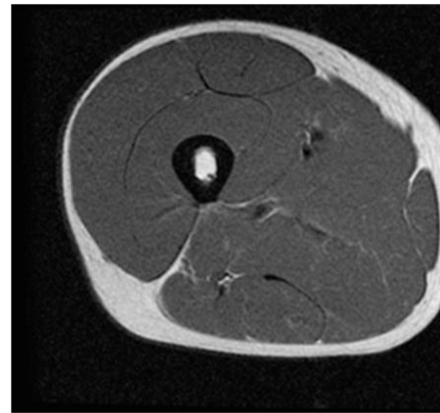
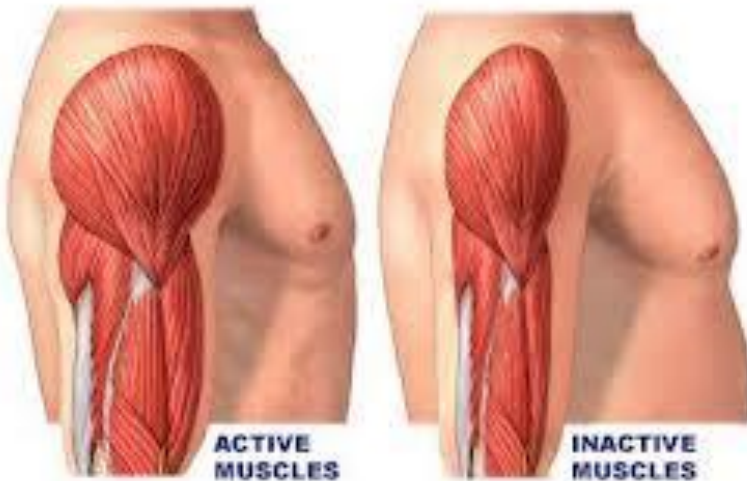
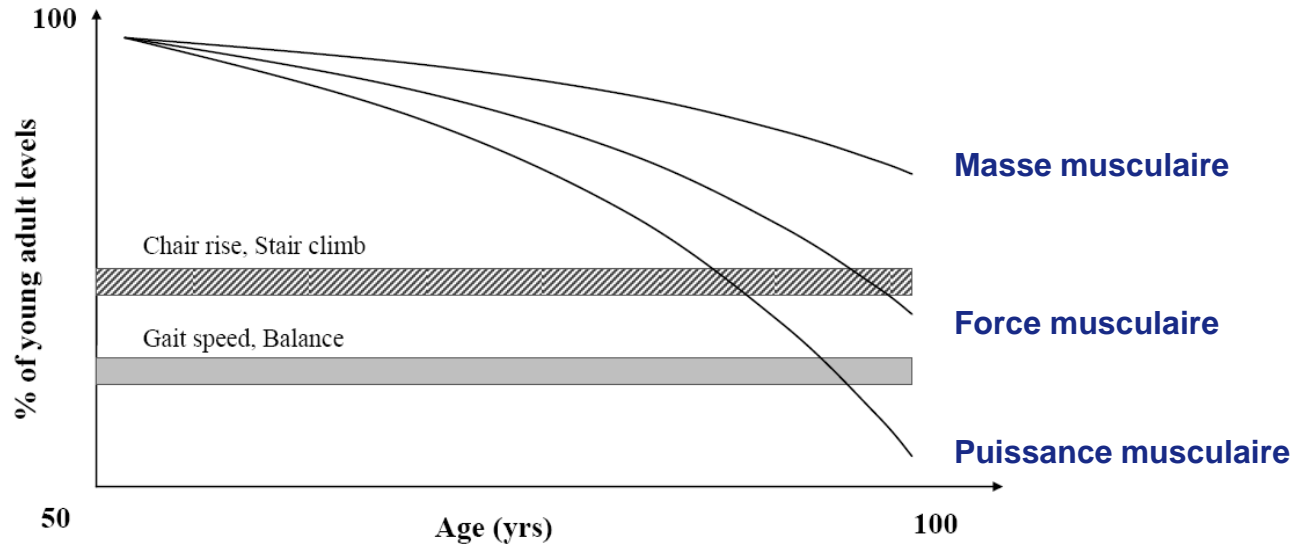


I have decided to age well!

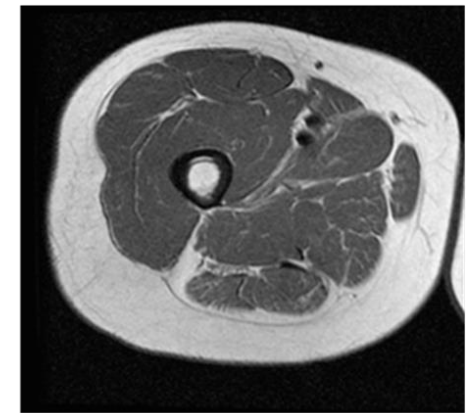


Sarcopénie: Définition

Lien entre masse musculaire, force et puissance



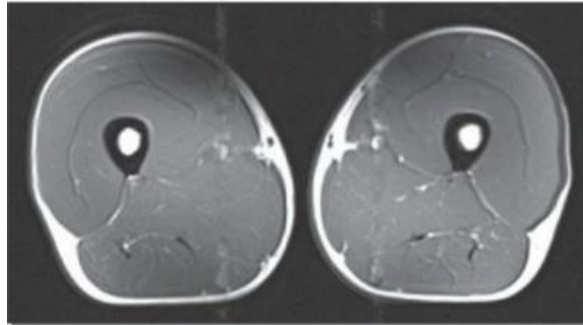
Age 25



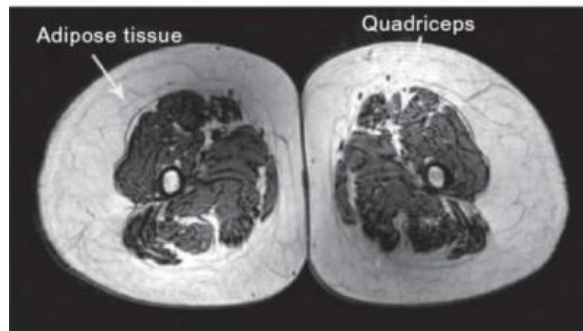
Age 63

Sarcopénie : pas une fatalité ?

40 ans triathlète



70 ans sédentaire

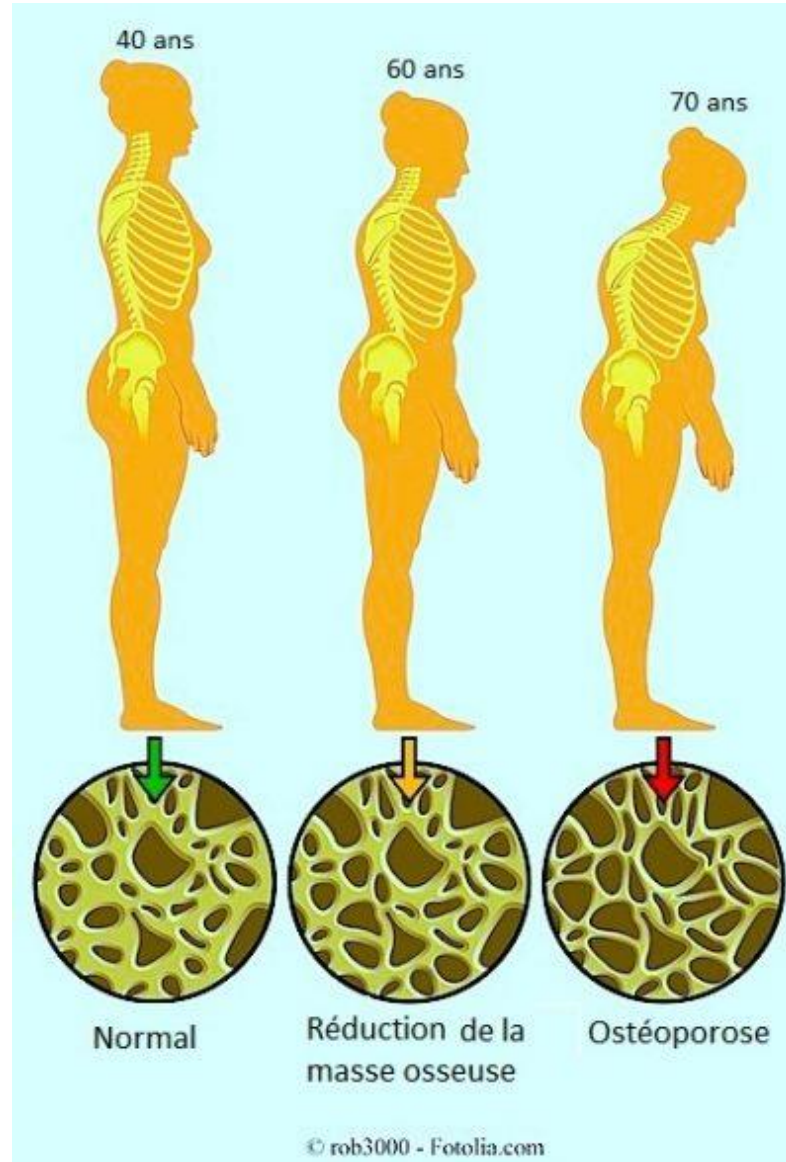


70 ans triathlète

Ostéoporose

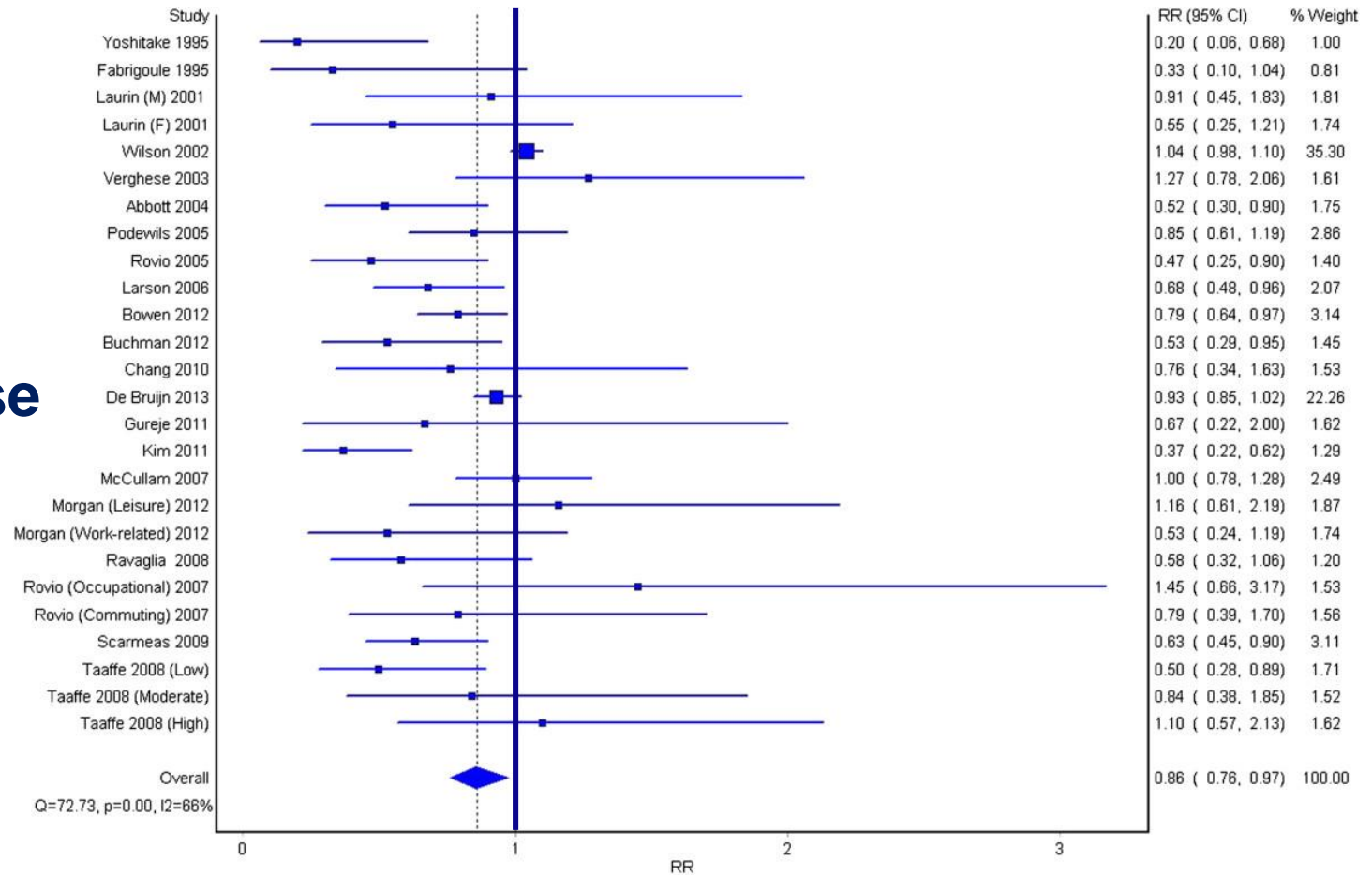
Marche, marche, marche

Vitamine D : en prenez vous pour bien vieillir ?



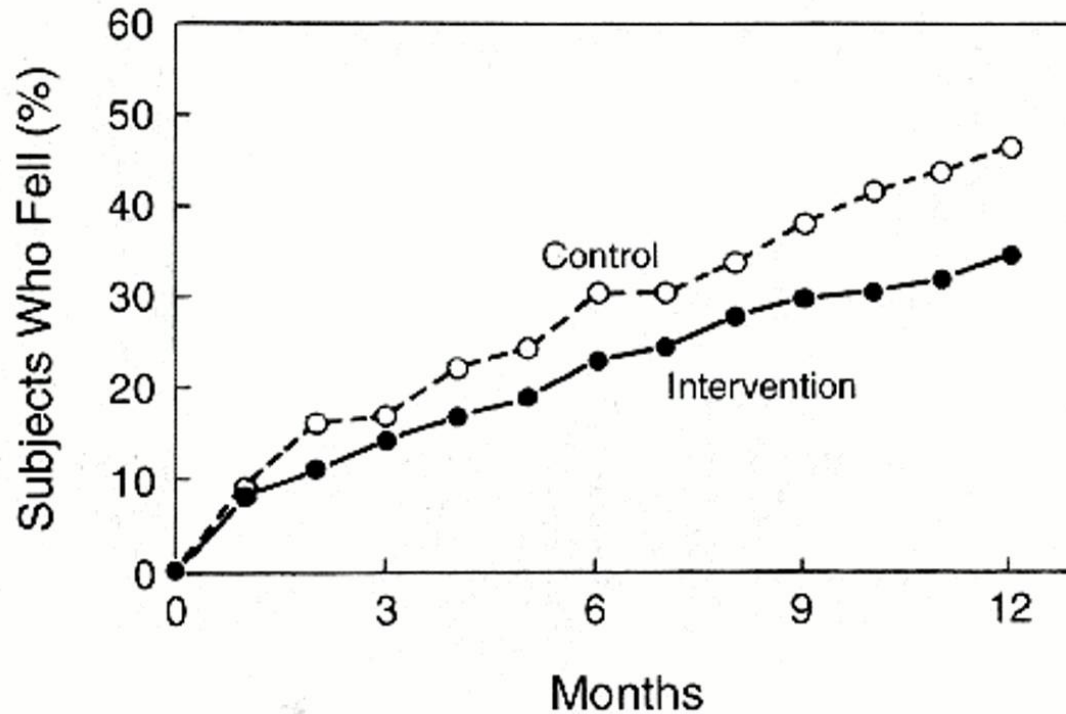
Activité physique et troubles cognitifs

Méta-analyse



Méta-analyse

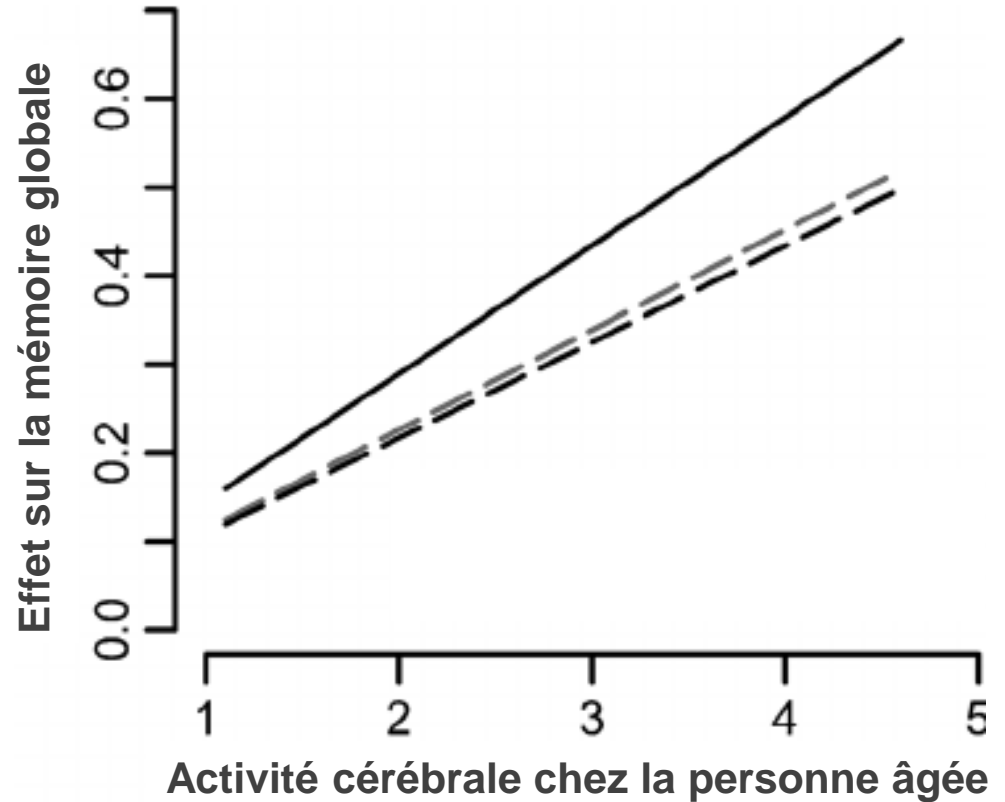
Apprendre à ne pas chuter



Intervention	153	130	113	103	95
Control	148	123	102	89	76
Relative risk	—	0.86	0.77	0.79	0.75

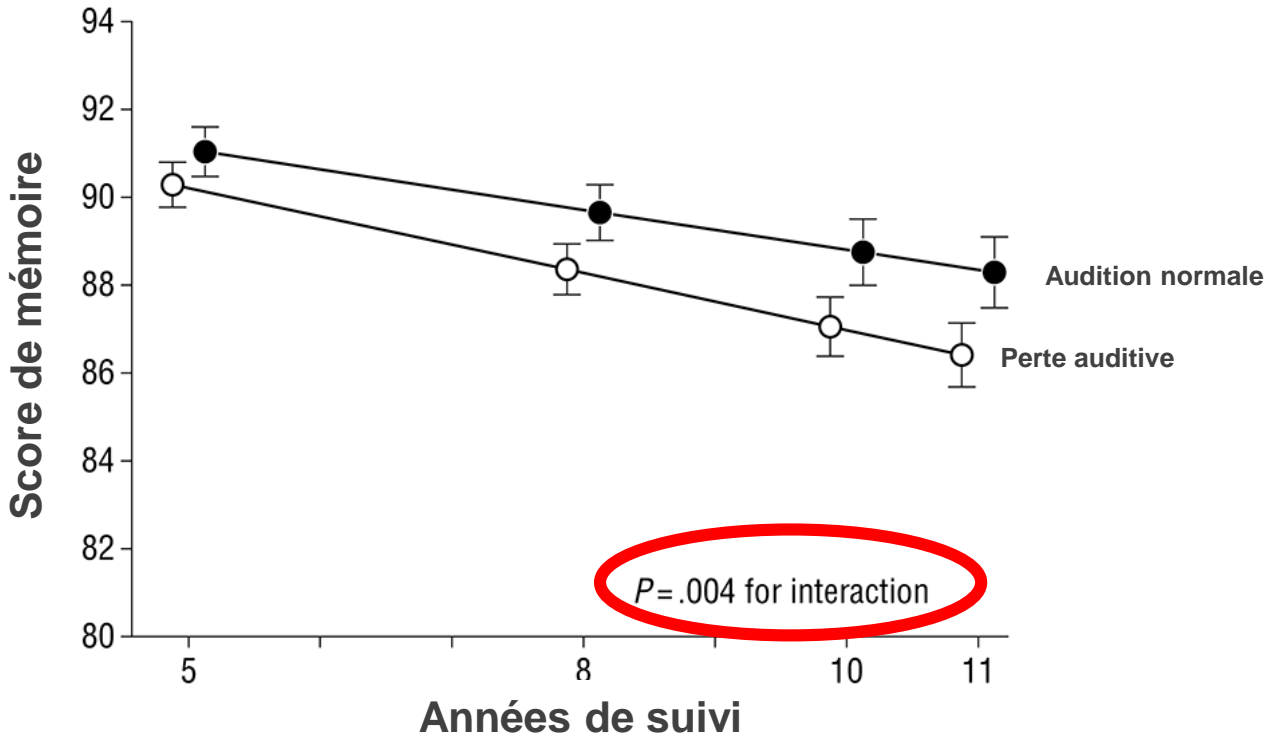
Avoir une activité cérébrale forte

Pas d'âge pour bien vieillir !



Perte auditive et déclin de la mémoire

A



No. of Participants

Normal hearing	818	660	605	530
Hearing loss	1157	876	766	639

LONGEVITY : Research and Prevention

Centre de Recherche sur la Longévité

Maladies cardiovasculaires

Maladies métaboliques

Maladies neuro-dégénératives

Infection, Immunité

Cancer

Nouveaux médicaments

Centre Prévention Santé Longévité

Nutrition

Vaccination

Centre d'Examens de Santé

Formation

Pôle Pollutions Santé Longévité

Toxicologie génétique

Sécurité microbiologique

Développement de la recherche

National « free » screenings

Screenings for companies

Actions for prevention

Longevity pathway



4 OBJECTIVES OF THE LONGEVITY PATHWAY

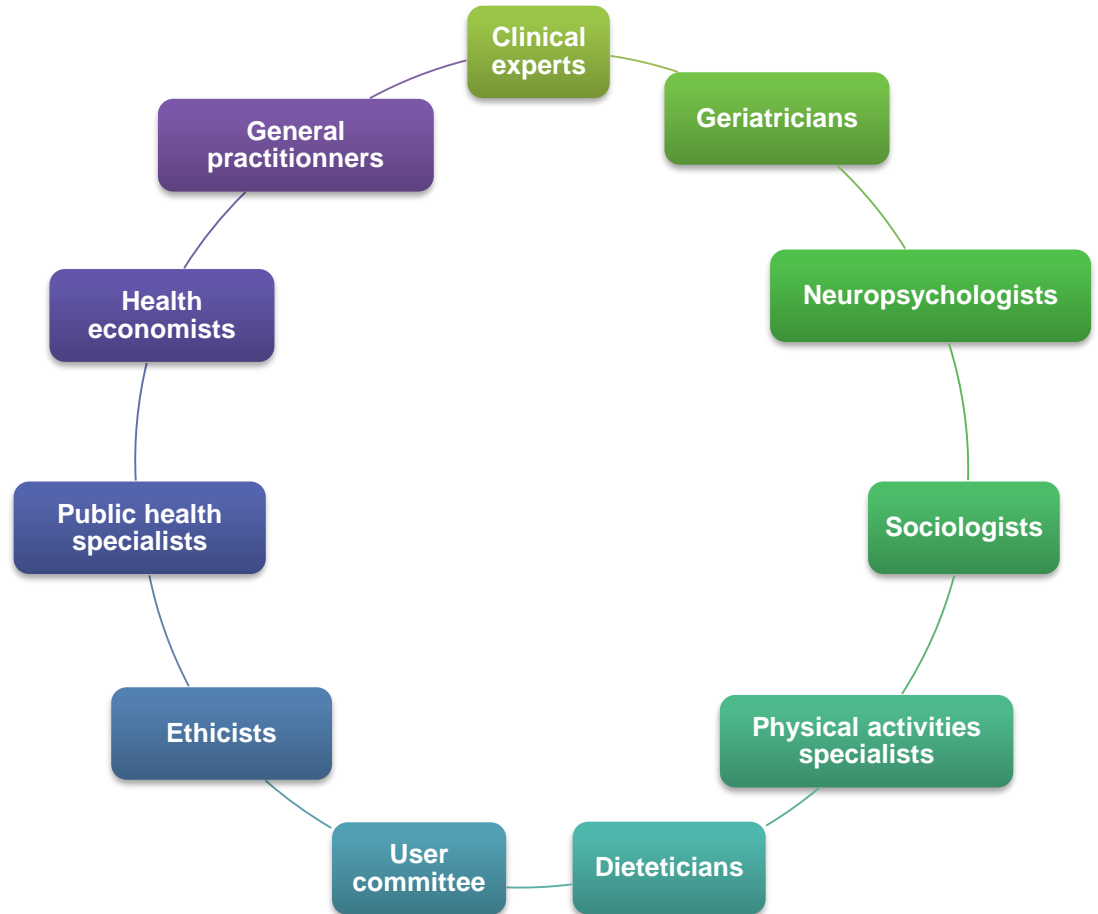
ACTIVE AGING FOR SUCCESSFUL AGING

- **Health prevention: identify early as possible reversible frailties to maintain optimal autonomy for targeted population: frail retired, helpers, precarious...**
- **Teaching and education of active aging for successful aging : health professionals, health at work, preparation to retirement...**
- **Research in prevention and medico-economy**
- **Diffusion in France and longevity network**

LONGEVITY PATHWAY: SCIENTIFIC COMITY

**Latest
recommendations/
bibliography EBM**

**Simple
Acceptable
And non-invasive tools**



LONGEVITY PATHWAY: SCIENTIFIC COMITY

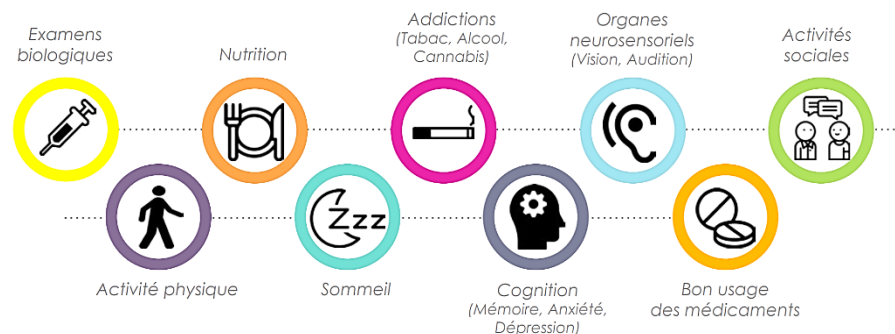
COORDINATION : Dr P. CASSAGNAUD, Pr E. BOULANGER

Thématique	Expert(s)/Réfèrent(s) - Institut Pasteur de Lille	Expert(s)/Réfèrent(s) - CHU, Université de Lille
Alimentation	Dr JM. LECERF, Médecin Nutritionniste Dr P. VINCENT, Médecin Santé Publique B. LEFEBVRE, Diététicienne N. TIEM, Diététicienne	Pr F. TESSIER, Chimie-Aliment-Santé, Lille 2 Dr C. CATTEAU, MCU-PH de Chirurgie dentaire, Lille 2
Activité physique	Dr C. VANWALSCAPPEL, Médecin Santé Publique E. GUIOT, Educateur-Médico-Sportif	Pr F. BLOCH, PU-PH Gériatrie, CHU, Amiens Dr V. TUFFREAU, MCU-PH MPR, CHRU, Lille 2 Dr F. DAUSSIN, MCF, FSSEP, Lille 2
Audition	Pr E. BOULANGER, PU-PH Gériatrie	Pr C. VINCENT, ORL, CHRU, Lille 2
Vision	Pr E. BOULANGER, PU-PH Gériatrie	Pr P. LABALETTE, Ophtalmologie, CHRU, Lille 2
Sociale	Dr M. LEBLANC, Médecin Santé Publique	Pr V. CARADEC, Sociologue, Lille 3 Pr JF. GHEKIERE, Géo-démographie, Lille 1
Ethique		Dr D. DREUIL, Ethique, Gériatrie, CHU de Lille
Addictions Sommeil Stress, Anxiété	Dr F. LEJEUNE, Médecin Santé Publique A. SOUPPEZ, Educateur-Médico-Sportif S. BAL, diététicienne nutritionniste M. LENAIN, Psychologue spécialisée en neuropsychologie	Pr C. MONACA, Neuropsychologie, CHRU, Lille 2 Dr I. POIROT, Sommeil-Psychiatrie, CHRU, Lille 2 Pr C. MORONI, Psychologie, Lille 3
Cognition	Dr P. CASSAGNAUD, PH Gériatrie M. LENAIN, Psychologue spécialisée en neuropsychologie	Pr F. PASQUIER, PU-PH Neurologie, CHRU, Lille 2 Pr C. MORONI, Psychologie, Lille 3
Bon usage du médicament	Dr AL. CHARLENT, Pharmacien	Pr. B. DECAUDIN, PU-PH Pharmacie, CHRU, Lille2
Vaccination	Dr G. FLOC'H, Médecin Santé publique	Dr JB. BEUSCART, PHU, CHRU, Lille 2 Dr M. DAMBRINE, PH Pharmacie, CHRU, Lille 2
Représentants des usagers		A. CASSARIN-GRAND, Coordinatrice de France Assos Santé
Urgences et cardiologie		Pr P. GOLDSTEIN, Urgences CHU de Lille, Pr N. LAMBLIN, Urgences cardio-vasculaires, CHU de Lille, Pr D. MONTAIGNE, Explorations cardio-vasculaires, CHU de Lille
Pneumologie		Dr T. PEREZ, Pneumologie, CHU de Lille
Economie		B. DERVAUX, Economiste de la santé

LONGEVITY PATHWAY

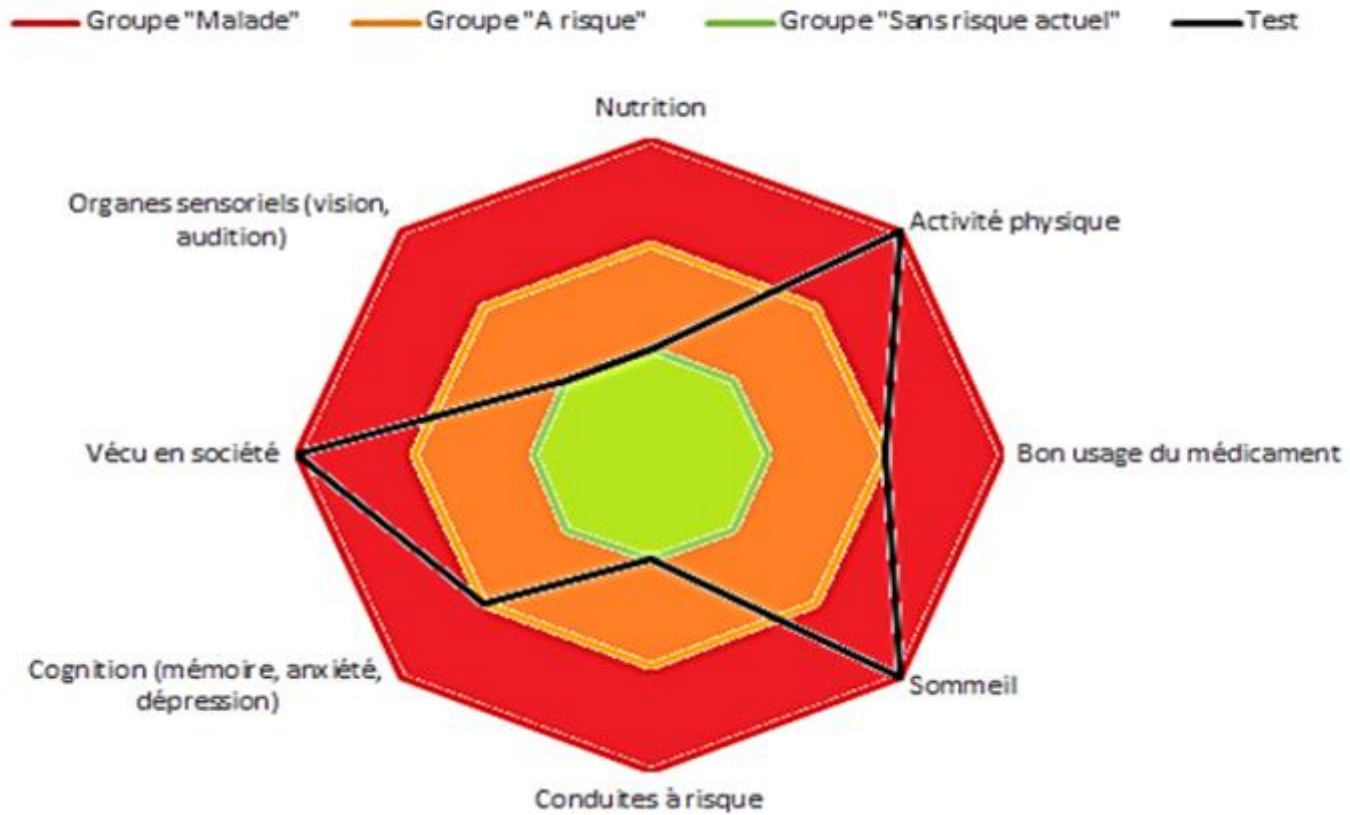
DETECT AND COACH REVERSIBLE FRAILTIES

- Auto-questionnaire: medico-psycho-social
- Biological analysis (vitamines B & D, Zinc...)
- Cognition - stress - sleep- quality of life
- Spirometry
- Vision : AMD, diabetic retinopathy, Cataracte, Glaucoma
- Audition : presbycusis
- Arterial stiffness and skin glycation
- Osteoporosis & sarcopenia
- Physical activity: sedentarity, walk, speed, equilibrium; fall risk
- Nutrition : proteins intake, calcium, vitamine D
- Drug use
- Medical synthesisis « 360 »
- Coaching of reversible frailties and evaluation
- Follow-up

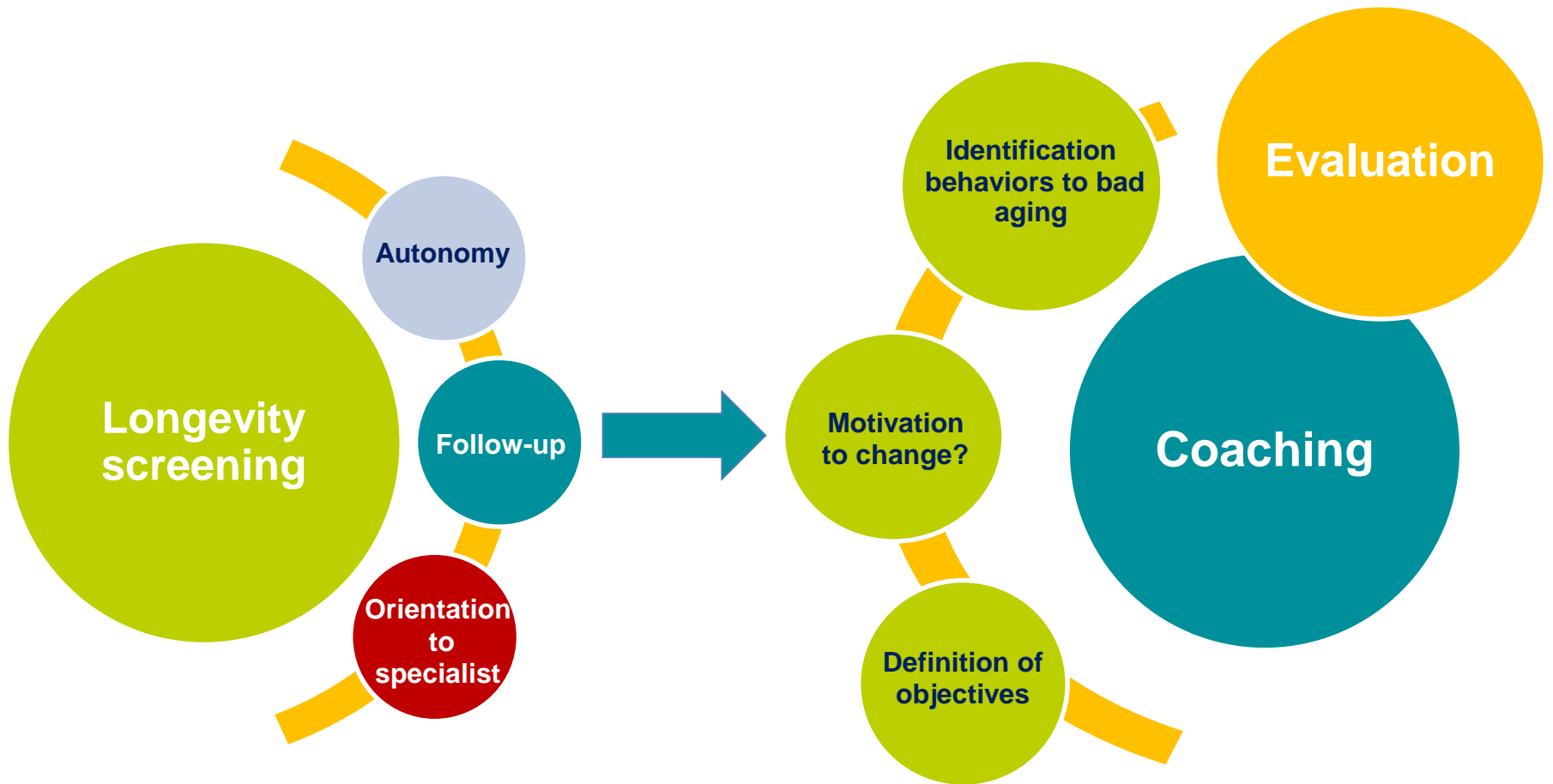


MEDICAL SYNTESIS

Radar personnalisé



LONGEVITY PATHWAY



TEACHING

- **Students : medicine, pharmacy, odontology**
- **Others health care students and professionals**
- **Education for others professionals**

- **University Diploma of Longevity**
- **Master Aging Biology (Paris 5-7, Toulouse, Tours Versailles, Lille)**

- **« Grand-public » lectures**

RESEARCH

- **Research comitee**
- **Non-interventionnal studies**
 - **Epidemiology**
 - **Medico-economy**
- **interventionnal studies**
 - **Coaching : efficacy**
 - **Clinical Investigation Center dedicated to prevention**

FUNDS

The Longevity Pathway is supported by

- **The Regional Health Agency (ARS) of “Hauts-de-France”**
- **The retirement assurance (CARSAT)**

Additionally preventive medicine for a successful aging, the project will develop research programs and health education courses

Opened in April 2018 and has been receiving 220 consultants since then



“The seeds of healthy ageing are planted early in life [Kofi Annan]”

Successful aging

Refer to an aging person who preserves good physical and mental capacities that allow her/him to stay independent and socially active



Age well

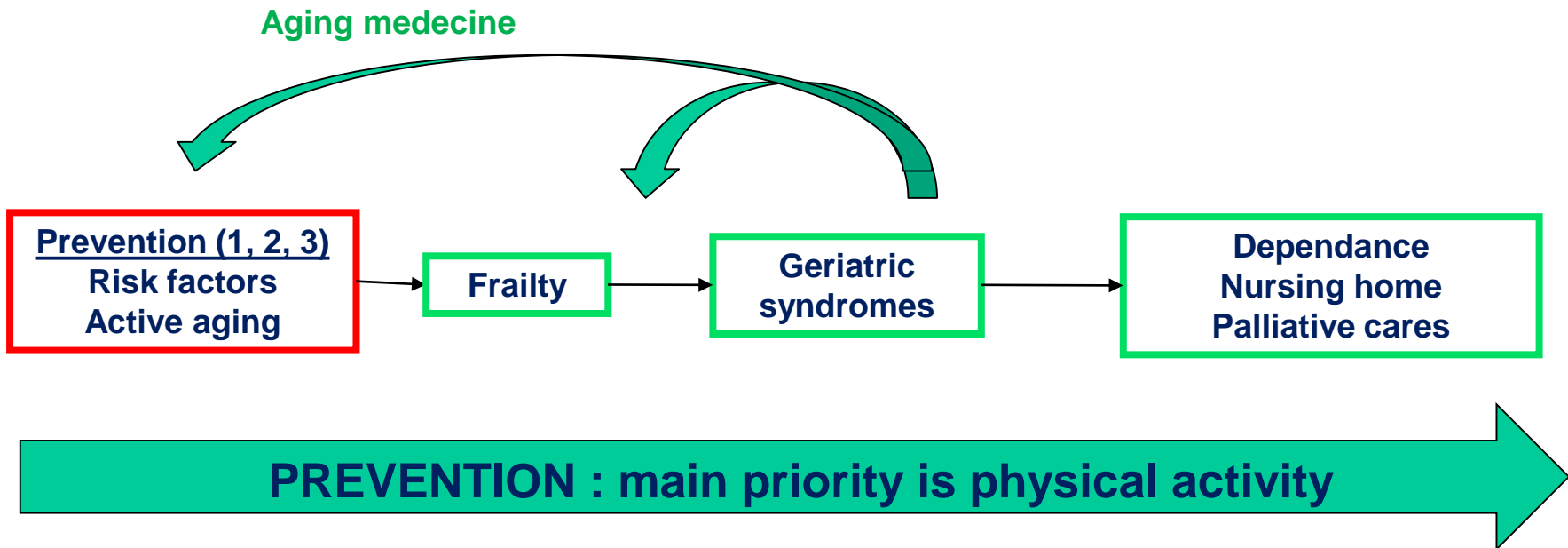
Refer to
normative standards
defined by others



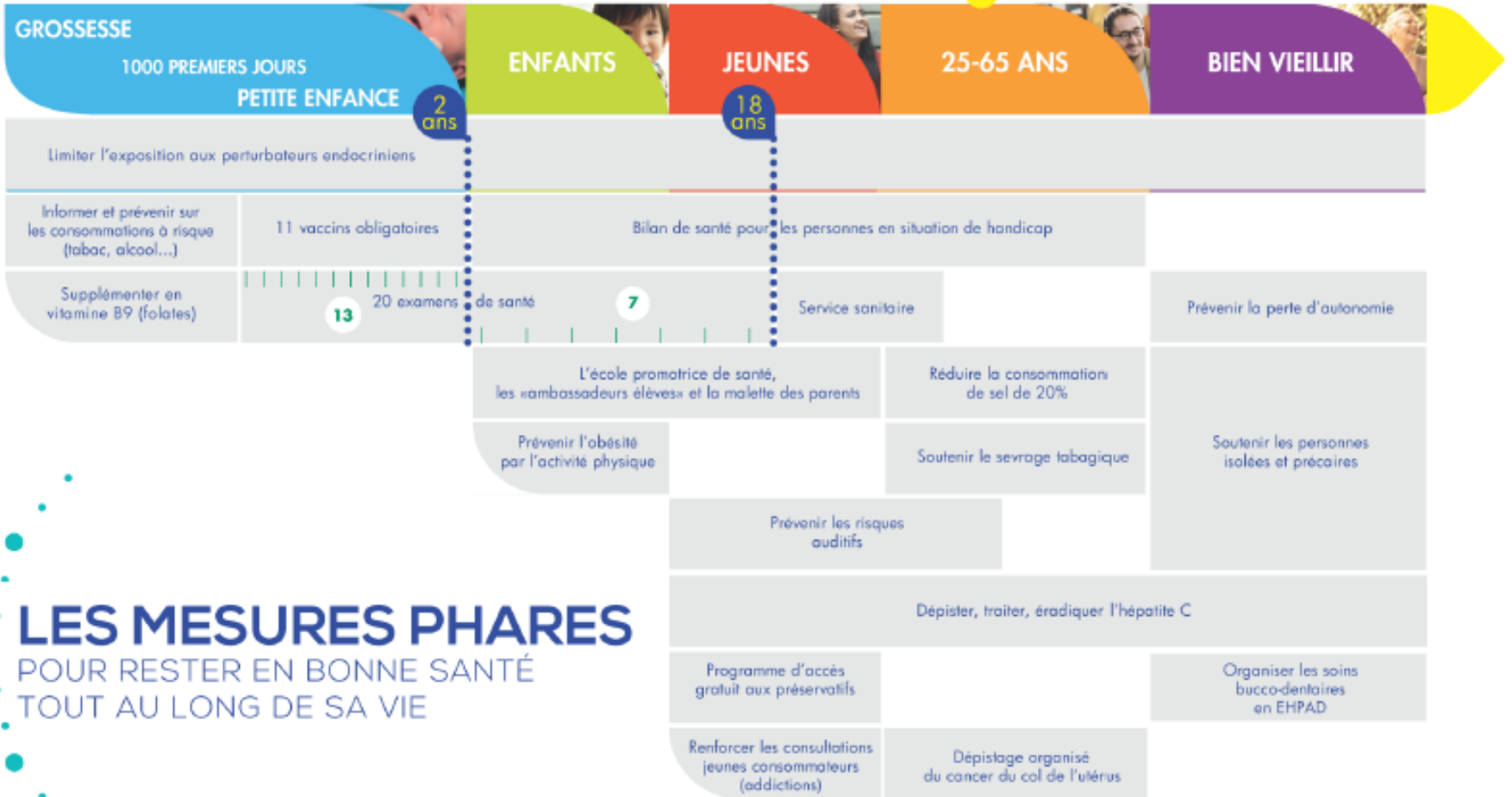
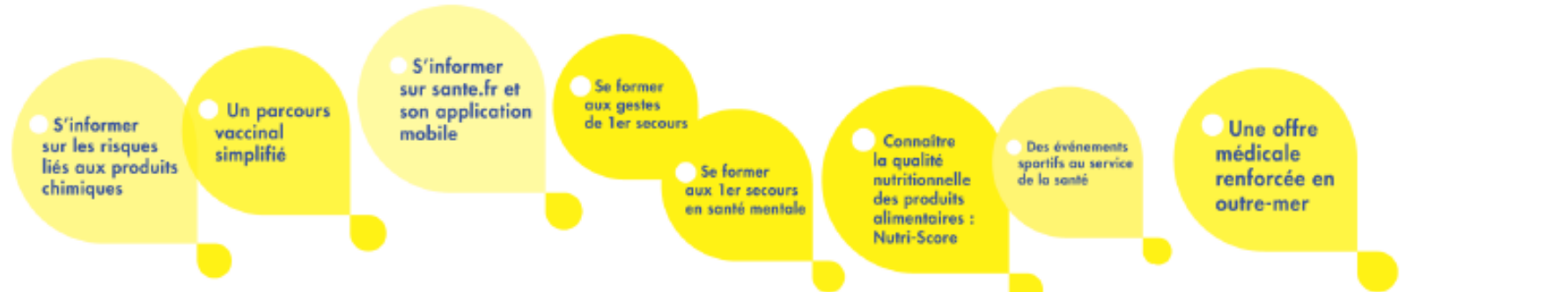
Well age

Refer to
own standards

Age better and longer



French Health Prevention Priority Plan

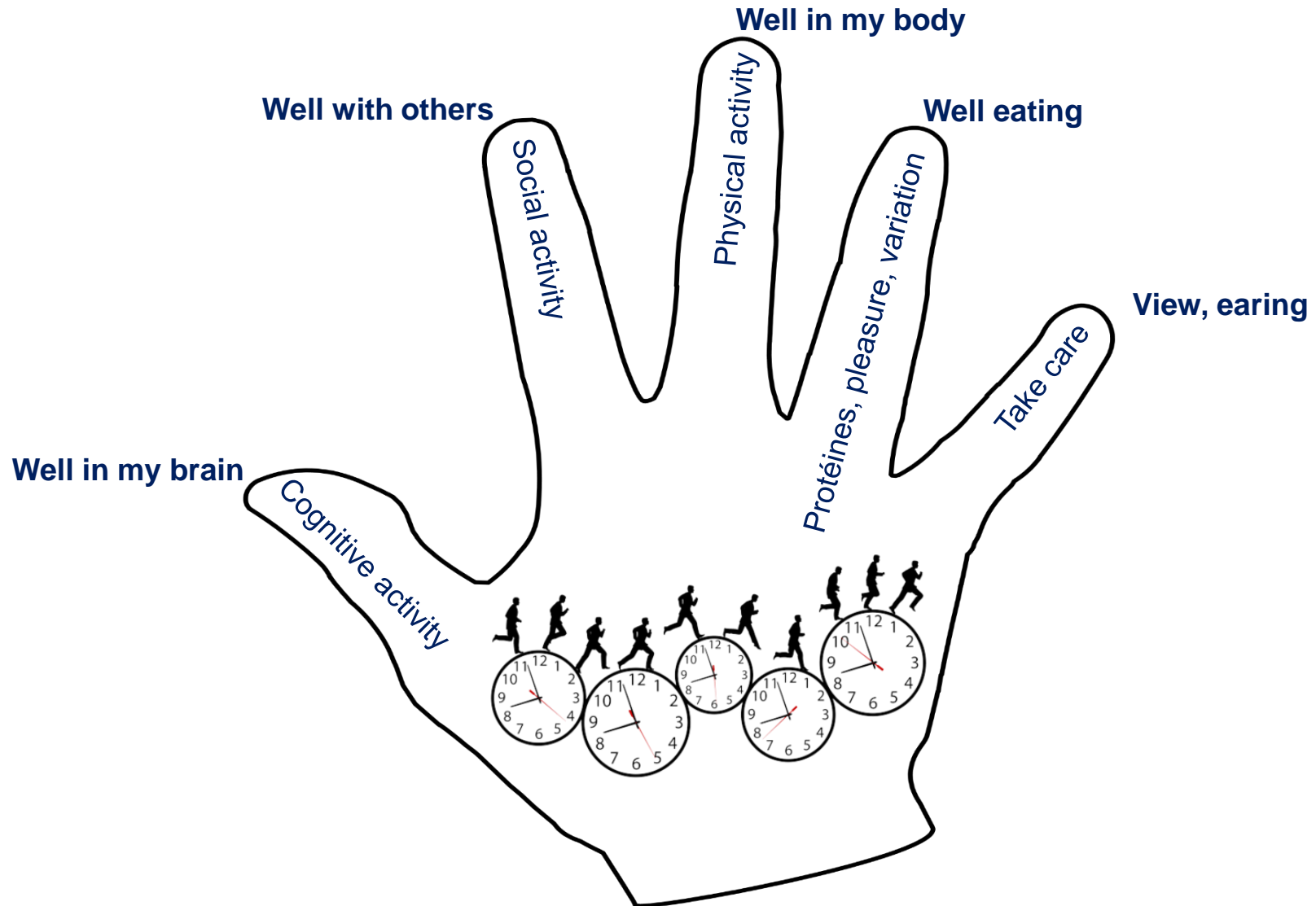


LES MESURES PHARES

POUR RESTER EN BONNE SANTÉ
TOUT AU LONG DE SA VIE

I have decided to well age

The 5 « wells » of active aging



Take Home Messages

- **Geriatric Boom is starting**
- **Waiting for physiological aging markers**
- **Education is crucial especially for precarious population**
- **Multidimensional approach is essential**
- **Difficulty to diagnose frailty**
- **Frailty is reversible**
- **Aging starts very early**
- **No age for prevention**
- **Active aging for successful aging**
- **Stop talking about age but talk about status**

FRAIL?

