





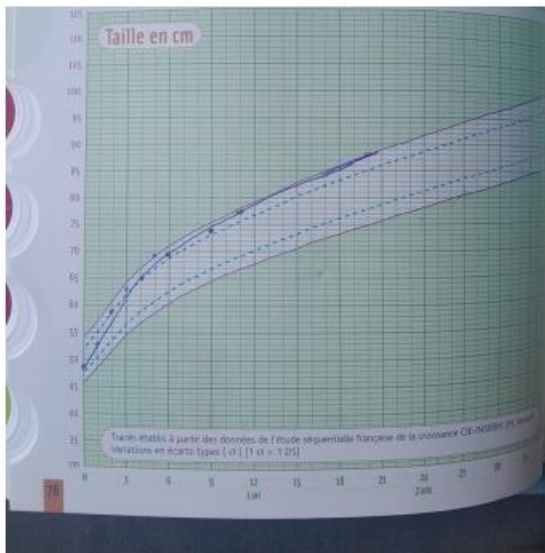

IHU HealthAge 1st SAB September 5-7, 2024

**Intrinsic capacity centile curves: from
ICOPE Step2 to Step1**
 Philippe de Souto Barreto, PhD, Professor
 IHU HealthAge

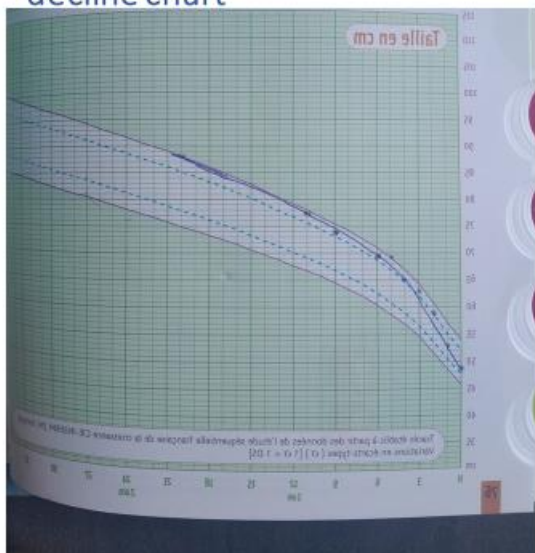




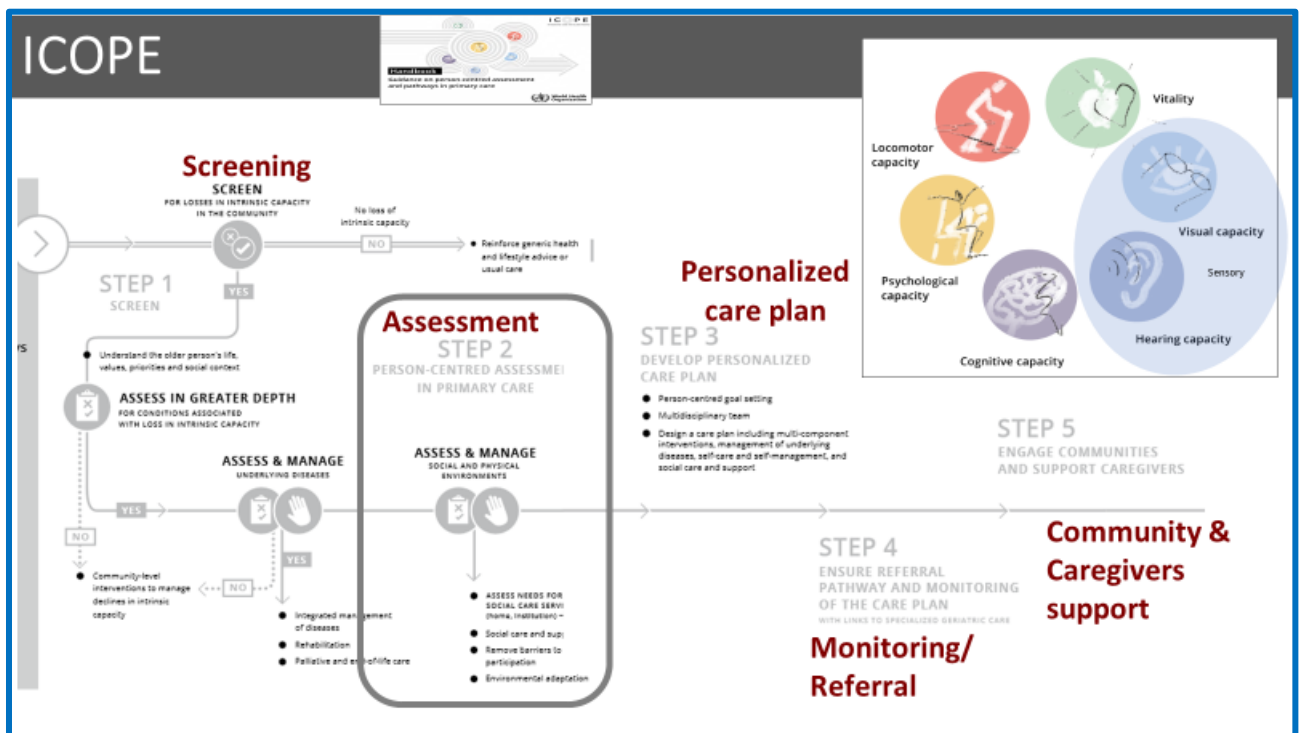
Growth charts: monitoring children's growth



Reversing the curves: a functional decline chart







nature aging

Letter <https://doi.org/10.1038/s43587-023-00522-x>

Reference centiles for intrinsic capacity throughout adulthood and their association with clinical outcomes: a cross-sectional analysis from the INSPIRE-T cohort

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Wan-Hsuan Lu^{1,2,3}, Yves Rolland^{1,2,3}, Sophie Guyonnet^{1,2,3}, Philippe de Souto Barreto^{1,2,3} & Bruno Vellas^{1,2,3}



INSPIRE Human Translation cohort (INSPIRE-T):

- Community-based
- Aged 20 to 102
- At any level of functional capacity
- N= 975 with complete IC data at baseline

ICOPE Step 2 assessments	
Cognition	MMSE (0-30 points)
Locomotion	SPPB (0-12 points)
Psychology	PHQ-9 (0-27 points)
Vitality	Handgrip strength (kg) + BMI (5 categories)
Vision	Visual acuity (VA) test using the WHO simple eye chart (for each eye: 0 if VA is worse than 3/60; 1 = VA 3/60; 2 = VA 6/60; 3 = VA 6/18 or better)
Hearing	Whisper test (0 if both ears fail on the test; 1 if one ear fails; 2 if both ears can hear correctly)

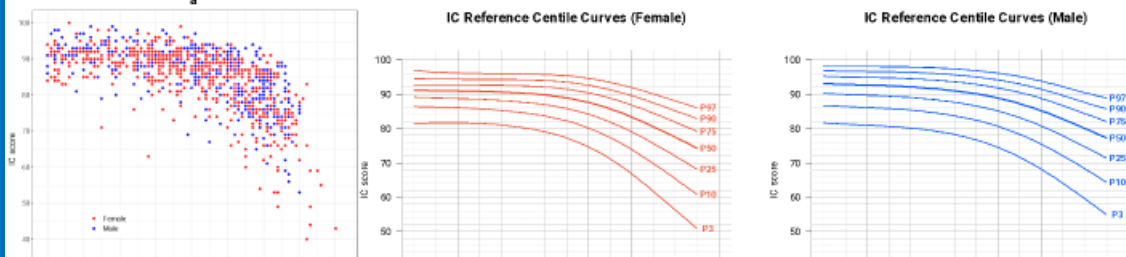


Table 2 | Association between IC centile groups and clinical outcomes

IC centile groups	n (%)	Outcome									
		High comorbidity		Pre frailty or frailty		≥1 ADL difficulties		≥1 IADL difficulties		Falls in the last 3 months	
		OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	p
Overall											
>P90	72 (7.4%)	Ref		Ref		Ref		Ref		Ref	
P76–P90	139 (14.3%)	2.5 (0.3, 22.1)	0.421	1.5 (0.6, 3.4)	0.378	1.1 (0.4, 2.8)	0.923	0.6 (0.1, 2.3)	0.424	7.1 (0.9, 55.3)	0.063
P26–P75	487 (49.9%)	7.4 (1.0, 56.0)	0.053	3.3 (1.6, 6.9)	0.002	1.4 (0.6, 3.4)	0.438	1.0 (0.3, 3.3)	0.935	8.4 (1.1, 61.9)	0.038
P11–P25	160 (16.4%)	8.4 (1.1, 66.2)	0.045	6.4 (2.9, 14.2)	<0.001	1.5 (0.6, 3.9)	0.414	1.7 (0.5, 5.7)	0.419	10.7 (1.4, 82.0)	0.023
≤P10	117 (12.0%)	18.0 (2.2, 144.2)	0.007	16.4 (7.1, 37.5)	<0.001	4.2 (1.6, 11.2)	0.004	4.8 (1.4, 16.8)	0.013	31.4 (4.1, 238.8)	<0.001

Dose-response associations:
Lower centile → higher probability of adverse outcomes

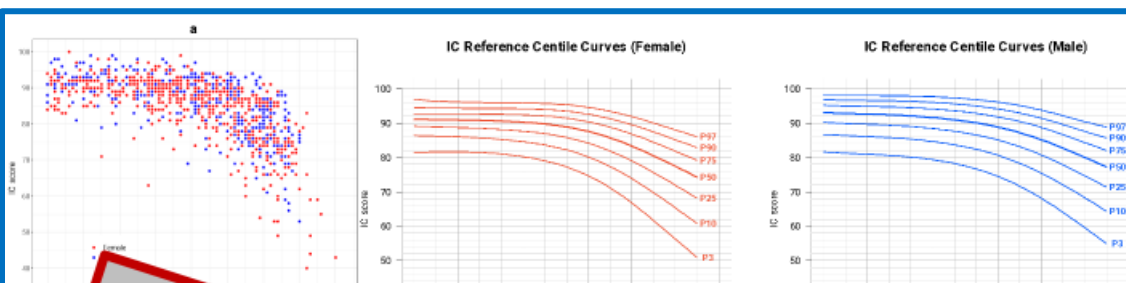


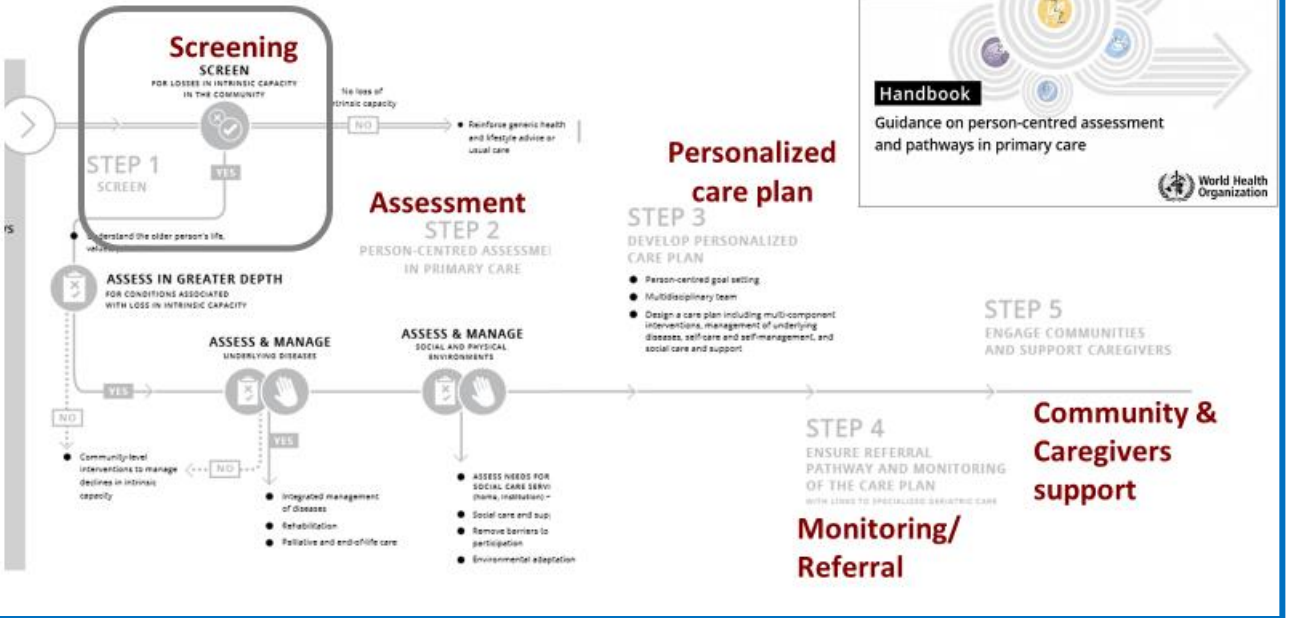
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Limitation of current IC curves in clinical practice: based on time-consuming in-depth assessments

Dose-response associations:
Lower centile → higher probability of adverse outcomes

ICOPE



ICOPE Care – Step 1 - Screening

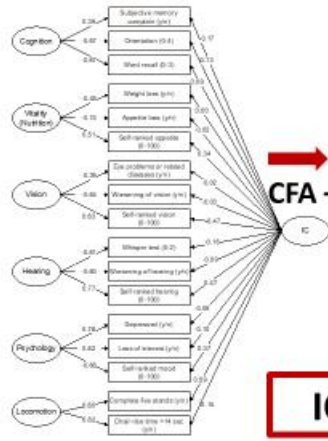


Priority conditions associated with declines in intrinsic capacity	Tests	Assess fully any domain with a checked circle
COGNITIVE DECLINE (Chapter 4)	<ol style="list-style-type: none"> Remember three words: flower, door, rice (for example) Orientation in time and space: What is the full date today? Where are you now (home, clinic, etc)? Recalls the three words? 	<input type="radio"/> Wrong to either question or does not know <input type="radio"/> Cannot recall all three words
LIMITED MOBILITY (Chapter 5)	Chair rise test: Rise from chair five times without using arms. Did the person complete five chair rises within 14 seconds?	<input type="radio"/> No
MALNUTRITION (Chapter 6)	<ol style="list-style-type: none"> Weight loss: Have you unintentionally lost more than 3 kg over the last three months? Appetite loss: Have you experienced loss of appetite? 	<input type="radio"/> Yes <input type="radio"/> Yes
VISUAL IMPAIRMENT (Chapter 7)	Do you have any problems with your eyes: difficulties in seeing far, reading, eye diseases or currently under medical treatment (e.g. diabetes, high blood pressure)?	<input type="radio"/> Yes
HEARING LOSS (Chapter 8)	Hears whispers (whisper test) or Screening audiometry result is 35 dB or less or Passes automated app-based digits-in-noise test	<input type="radio"/> Fail
DEPRESSIVE SYMPTOMS (Chapter 9)	Over the past two weeks, have you been bothered by - feeling down, depressed or hopeless? - little interest or pleasure in doing things?	<input type="radio"/> Yes <input type="radio"/> Yes

Article
Real-life intrinsic capacity screening data from the ICOPE-Care program

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Philippe de Souza Barreto^{1,2,3}, Emmanuel Gonzalez-Bautista^{1,2,3},
 Heiko A. Bischoff-Ferrari⁴, Vitor Pelagrin de Oliveira^{5,6},
 Renato Gorga Bandeira de Mello⁷, Sandrine Andrieux^{8,9}, Caroline Berbon¹,
 Nedra Tavassoli¹, John R. Beard¹⁰, Yves Rolland^{11,12},
 Maria Eugenia Soto Martin^{13,14} & Bruno Vellas^{1,2,3}



METHOD 2
 ICOPE screening score: 0 - 100

METHOD 1
 CFA – Bi-factor Model

ICOPE Care cohort N ≈ 23 000

Implementation of the WHO integrated care for older people (ICOPE) programme in clinical practice: a prospective study

Nedra Tavassoli, Philippe de Souza Barreto, Caroline Berbon, Céline Mathieu, Justine de Kimmel, Christine Lafont, Catherine Tokoda, Isabelle Camis, Antoine Plau, Tania Jouffrey, Sandrine Andrieux, Fatemeh Nourhashemi, John R Beard, Maria Eugenia Soto Martin, Bruno Vellas

METHOD 3
 ICOPE screening modified score (visual analog scales, VAS): 0 – 100

Test subset (n=4,904)