

Età alla prima sincope: la differente fisiopatologia della sincope nel **giovane e nell'anziano**

Andrea Ungar, MD, PhD, FESC

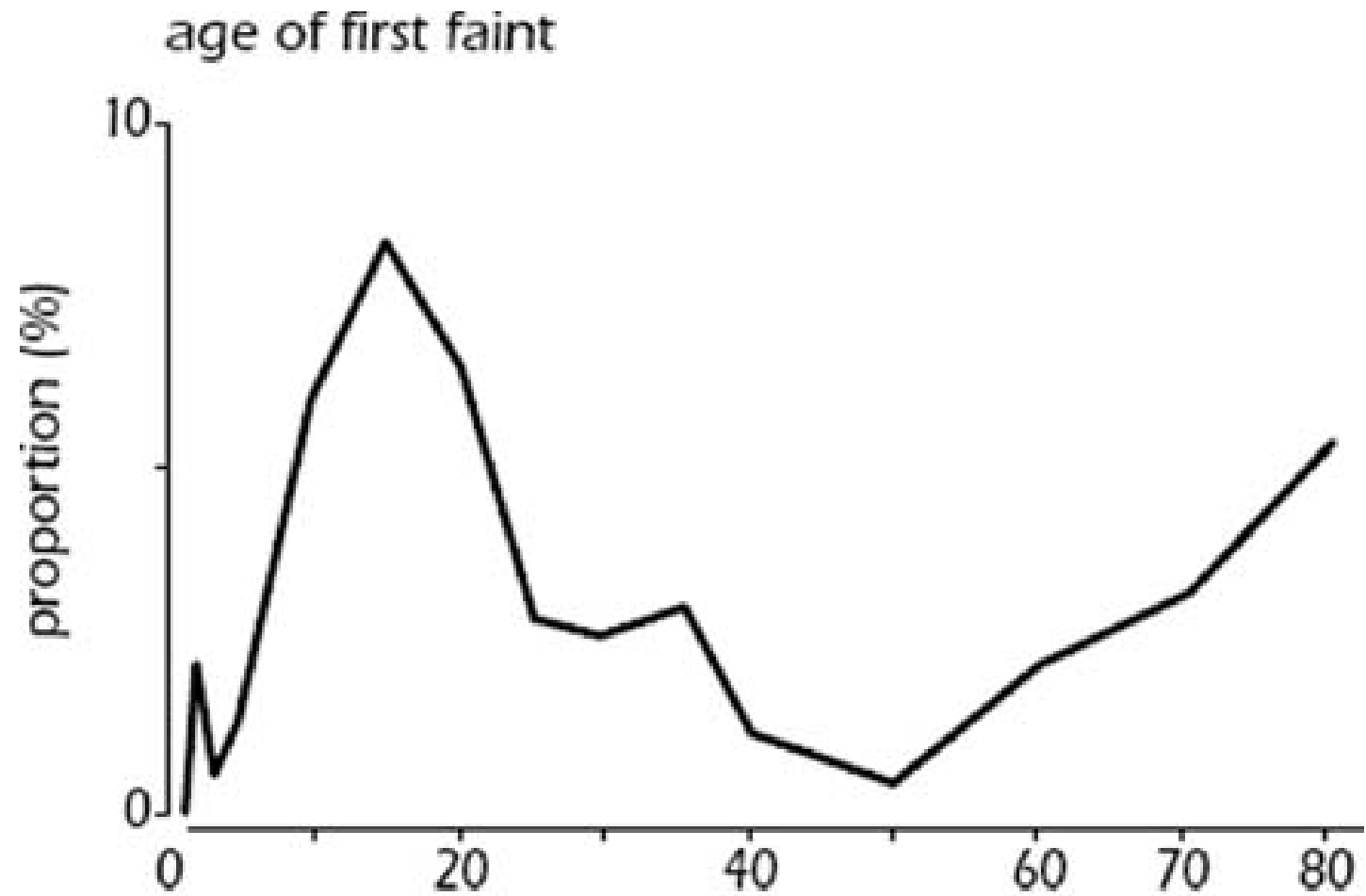
Geriatrica UTIG ,

Università degli Studi di Firenze,

Azienda Ospedaliero-Universitaria Careggi, Firenze

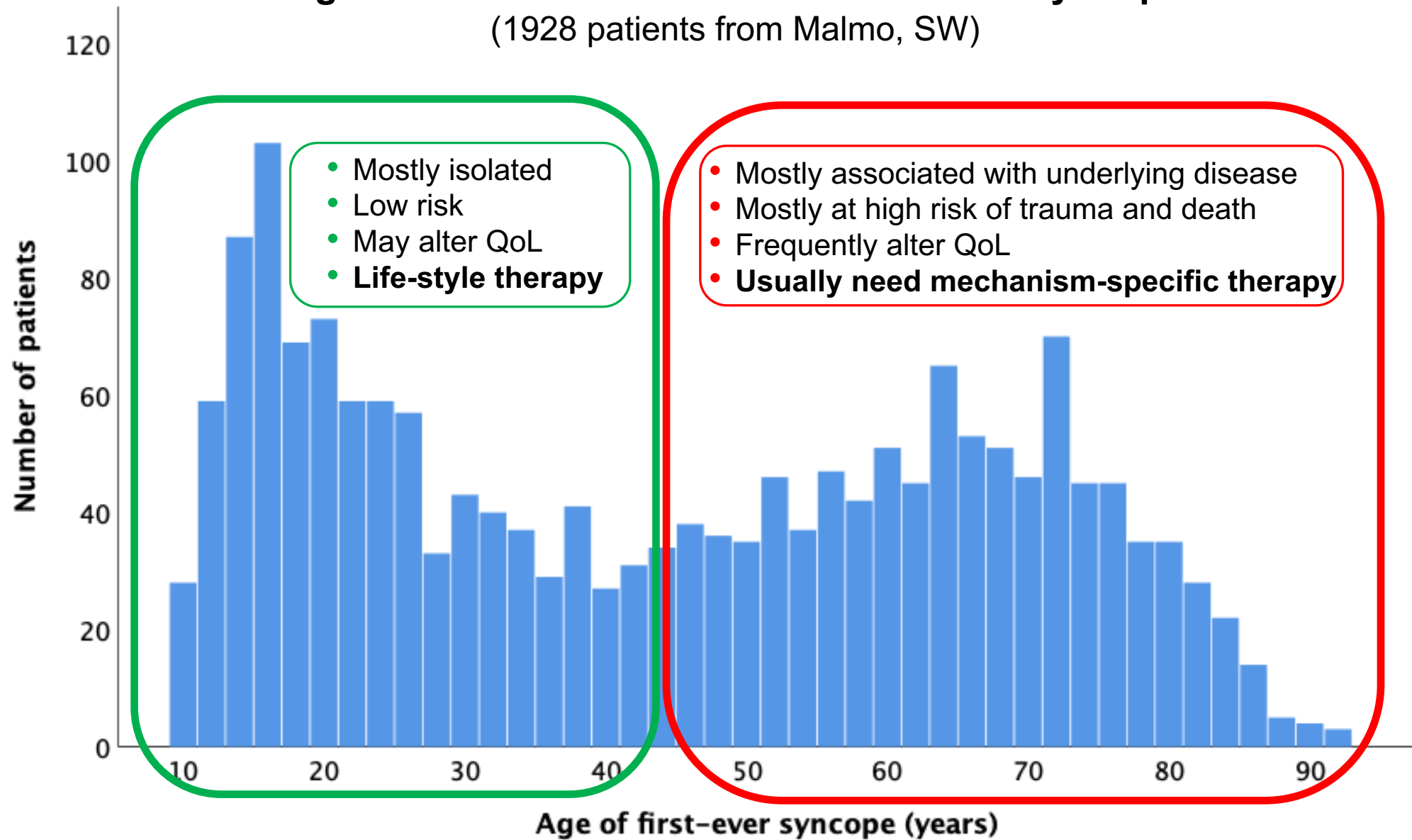
SINCOPE 2023





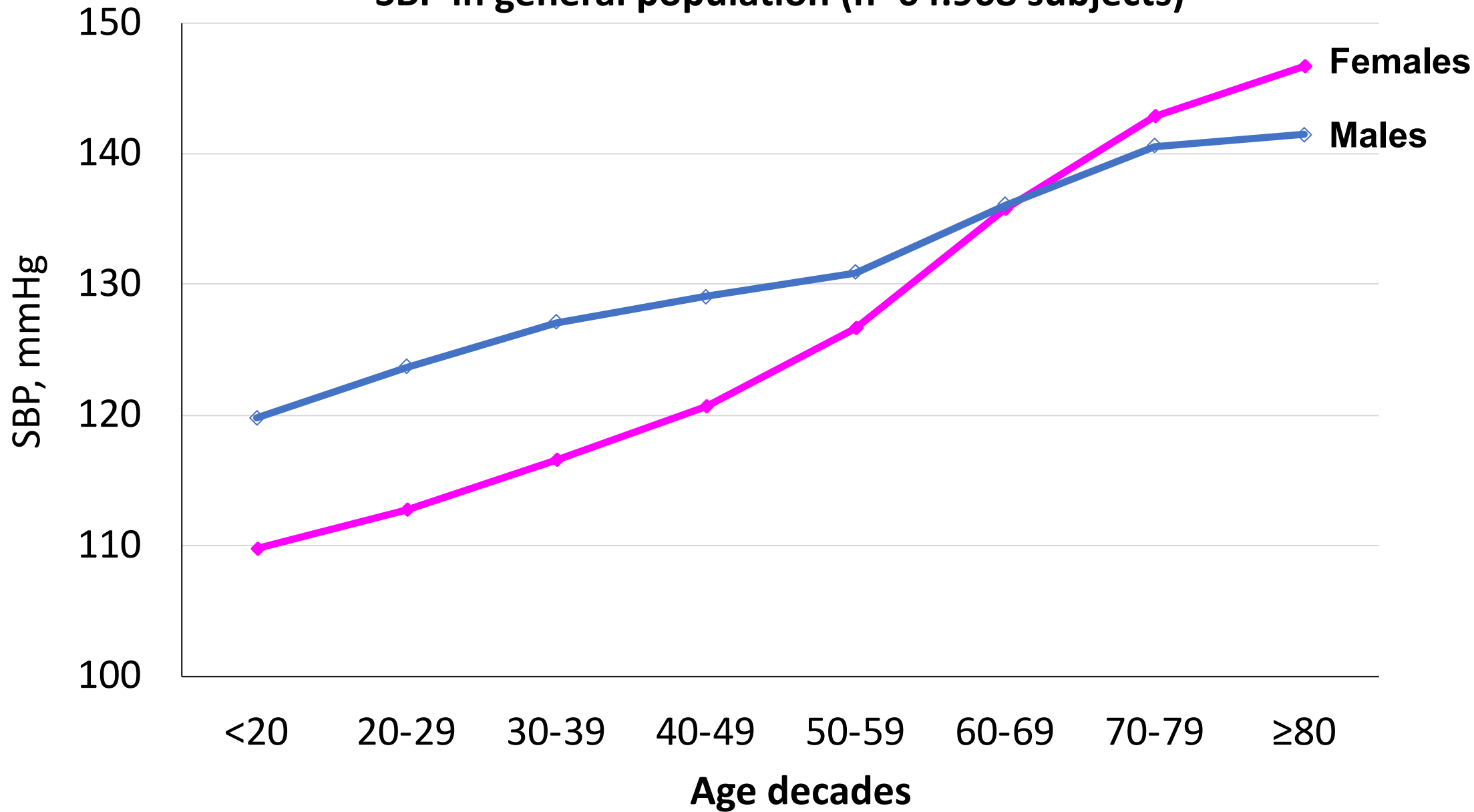
Age distribution of first-ever non-cardiac syncope

(1928 patients from Malmo, SW)

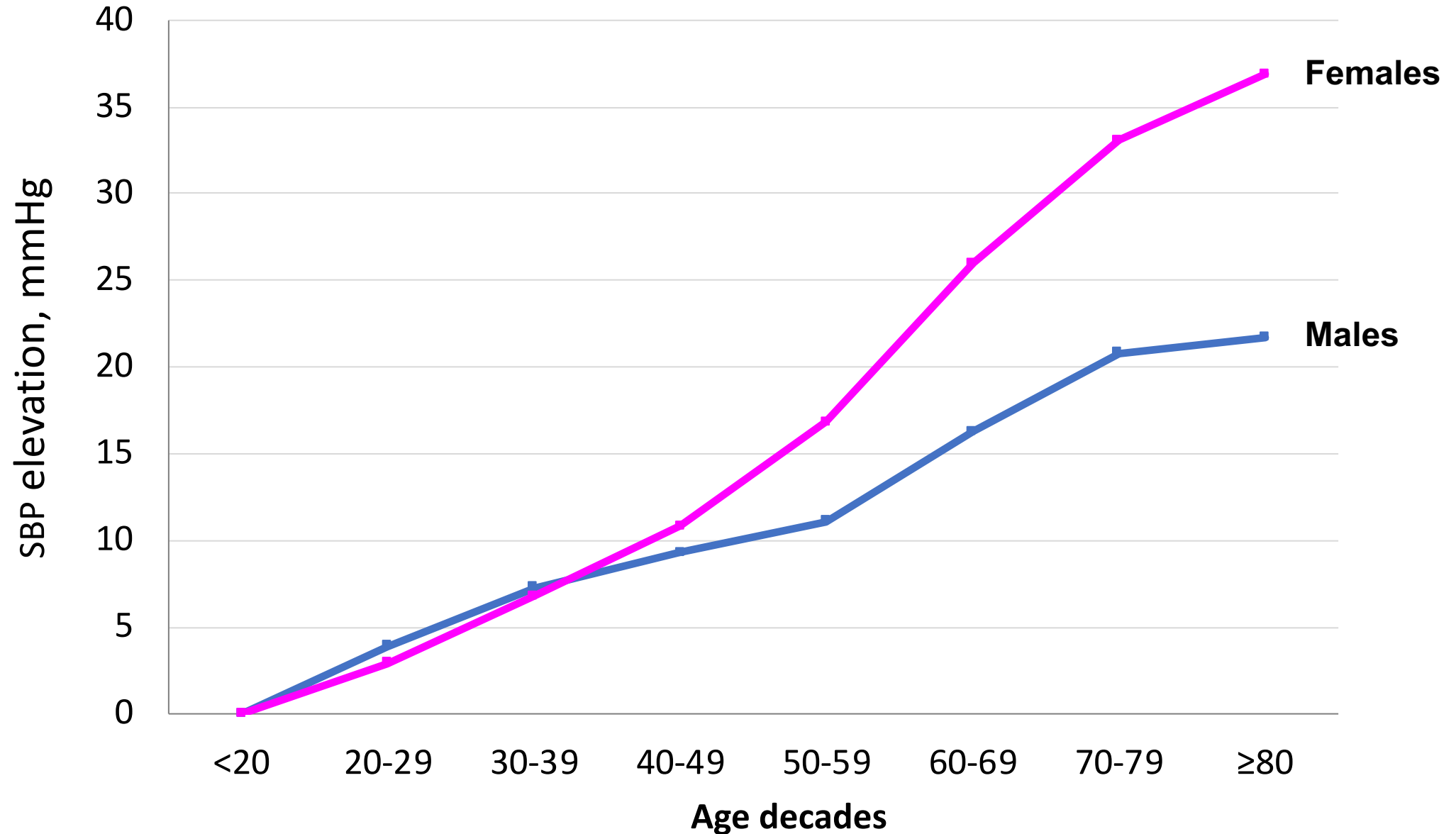


Torabi P, Rivasi G, Hamrefors V, Ungar A, Sutton R, Brignole M, Fedorowski A. Early and late-onset syncope: insight into mechanisms. *Eur Heart J* 2022

SBP in general population (n=64.968 subjects)

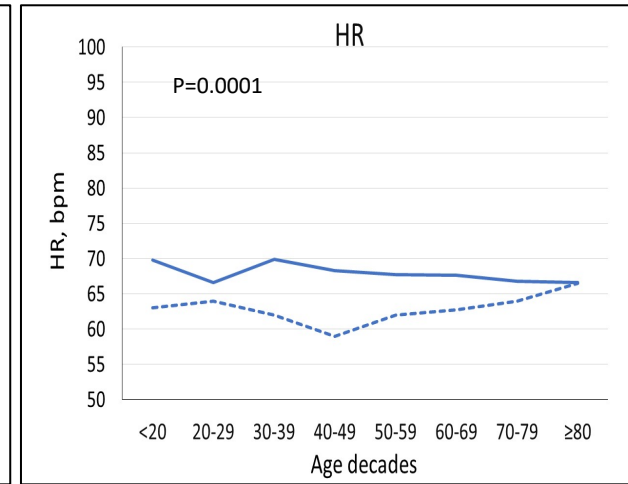
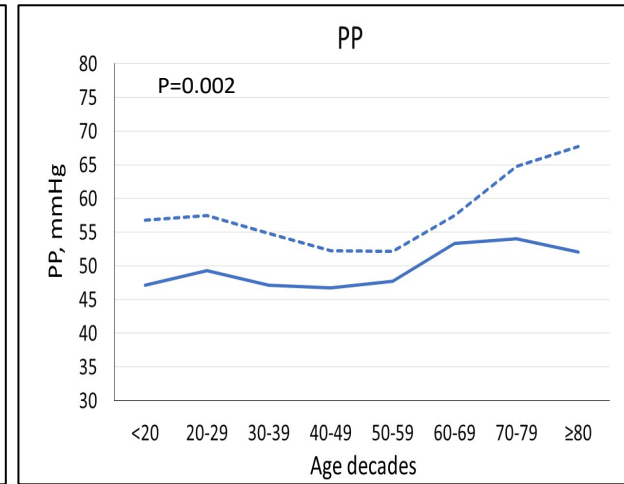
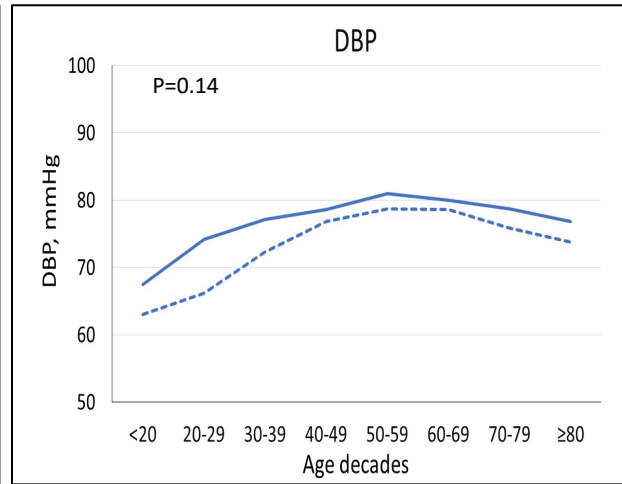
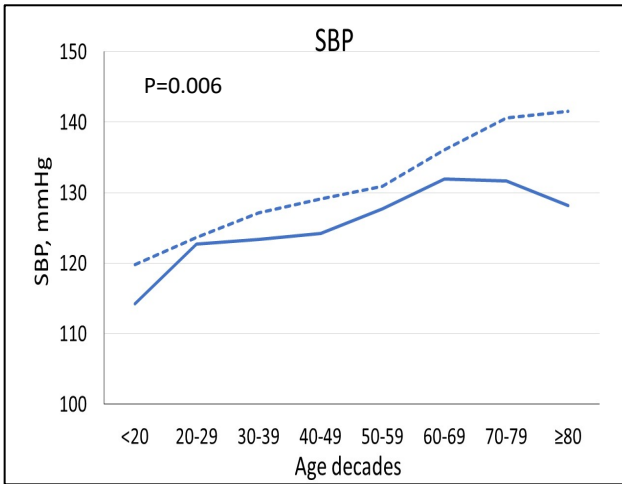


Elevation in SBP levels from baseline in general population

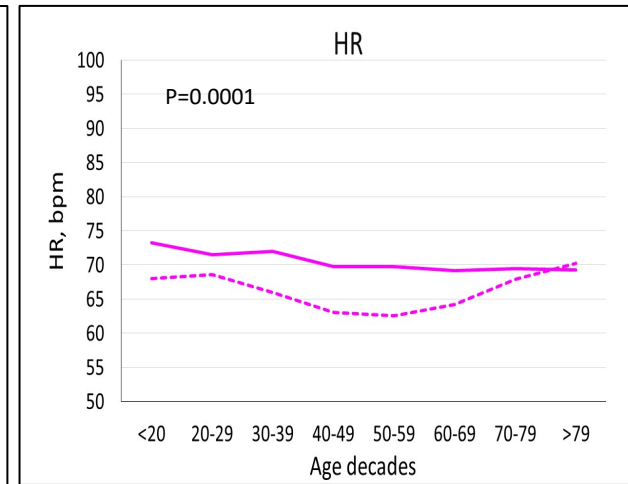
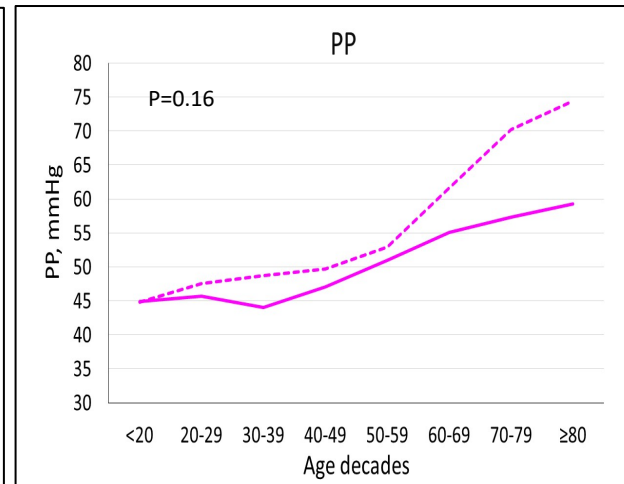
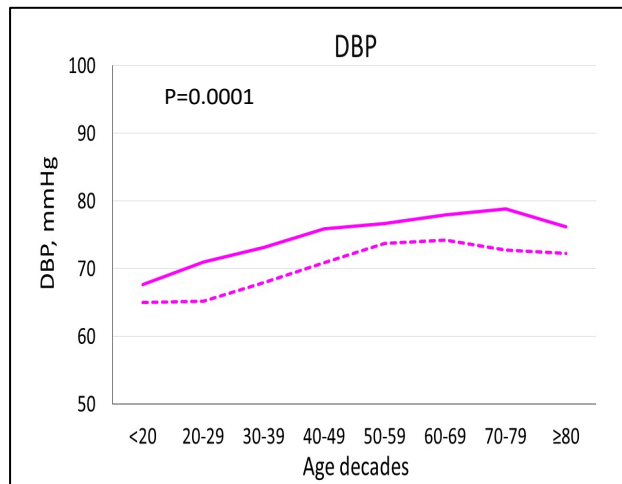
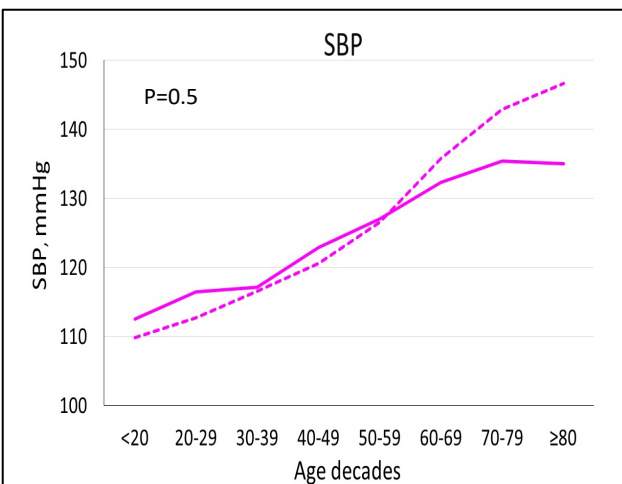


Patients with reflex syncope have a different cardiovascular physiology than in the general population (*J Hypertension* 2021)

Males



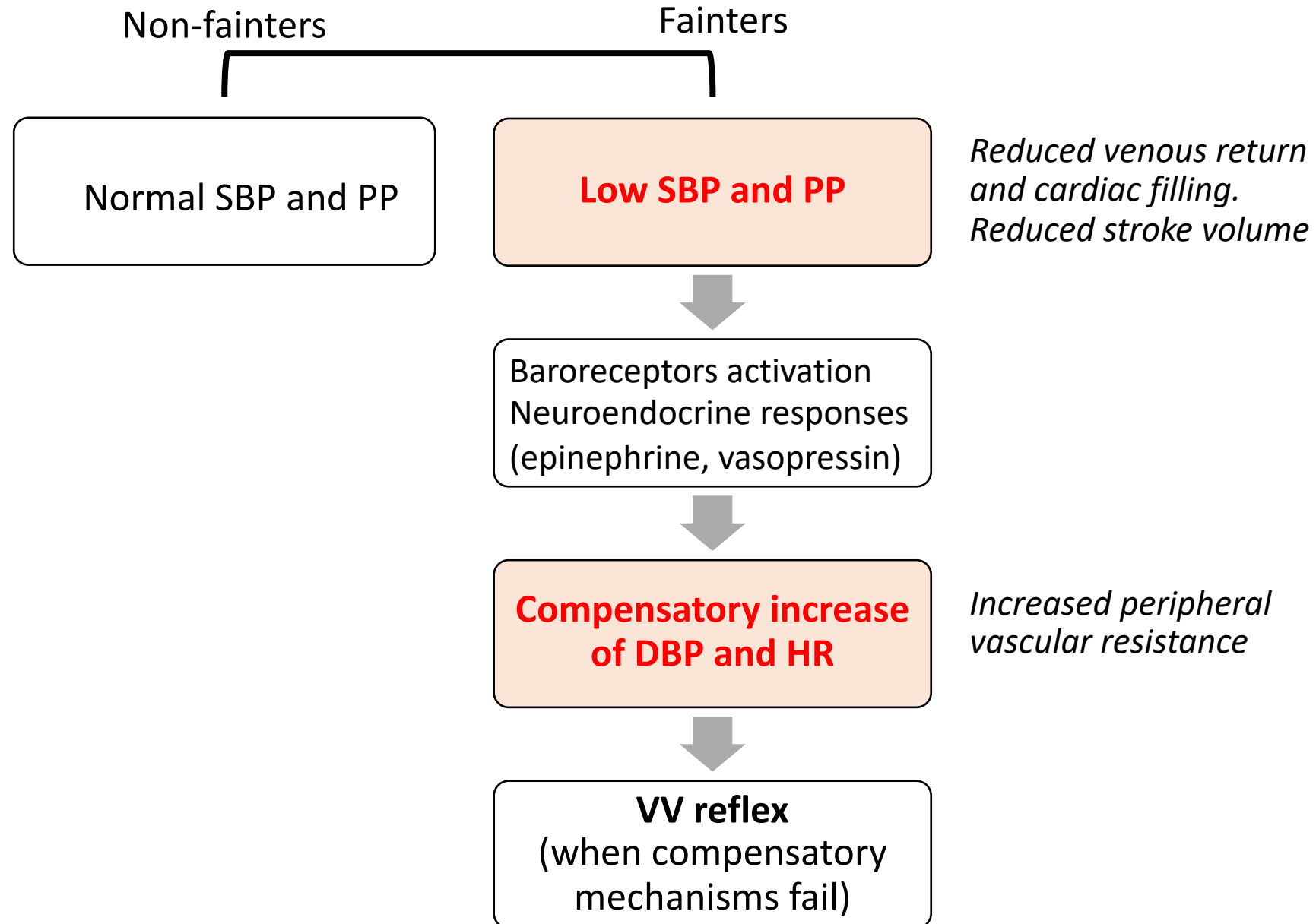
Females



————— Syncope

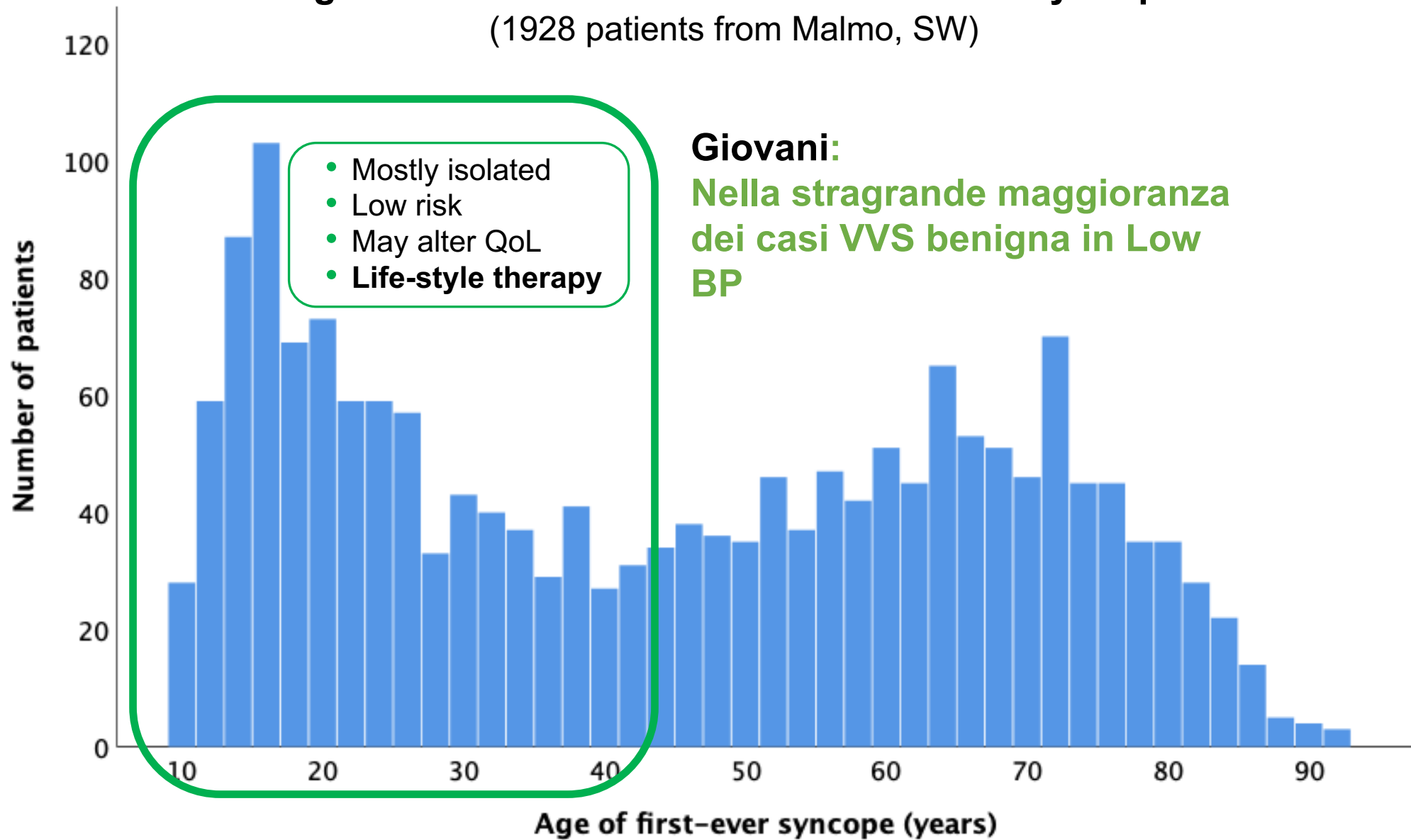
----- General population

Patients with reflex syncope have a different cardiovascular physiology than in the general population (*J Hypertension* 2021)



Age distribution of first-ever non-cardiac syncope

(1928 patients from Malmo, SW)



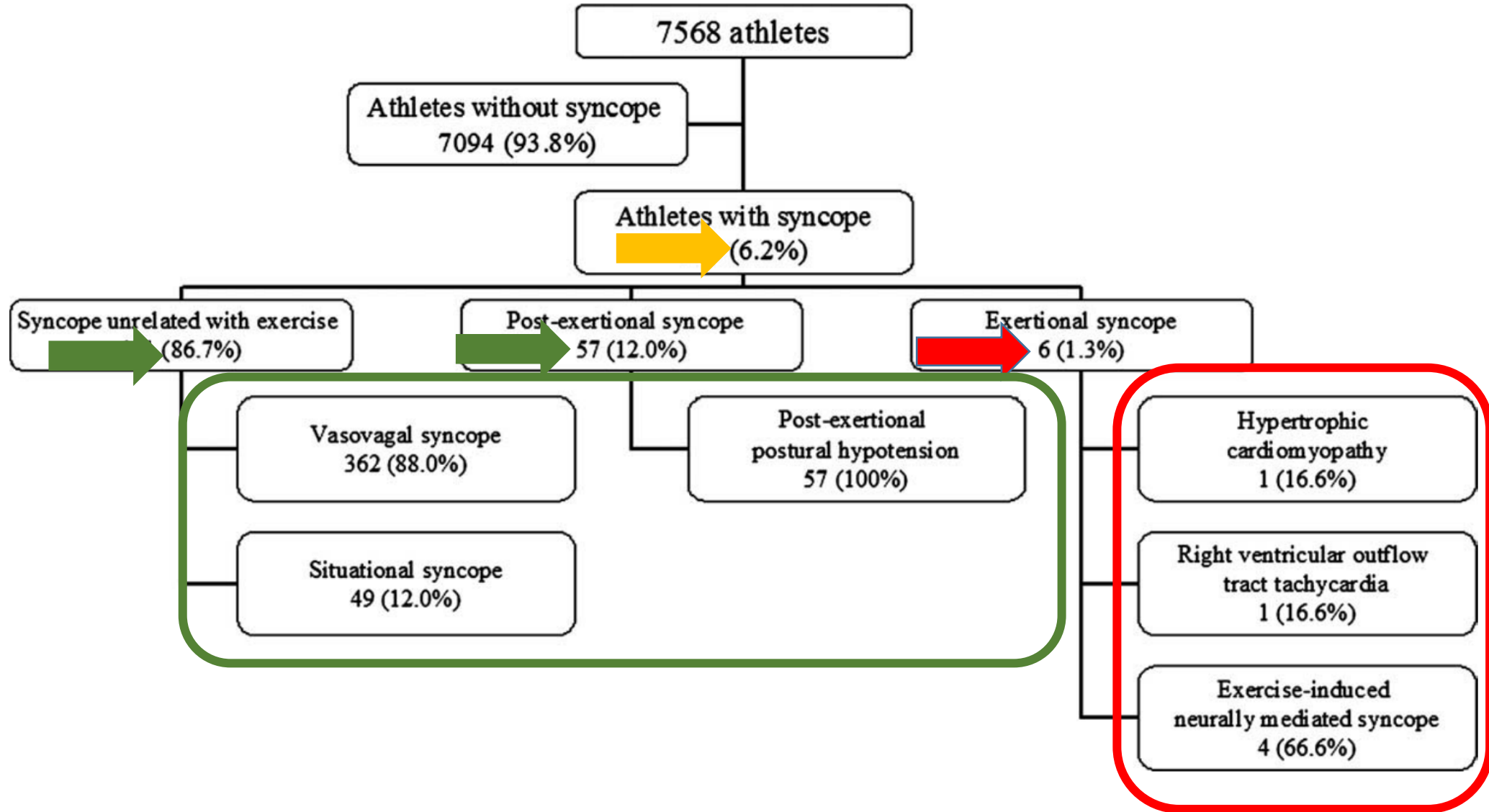
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L'atleta

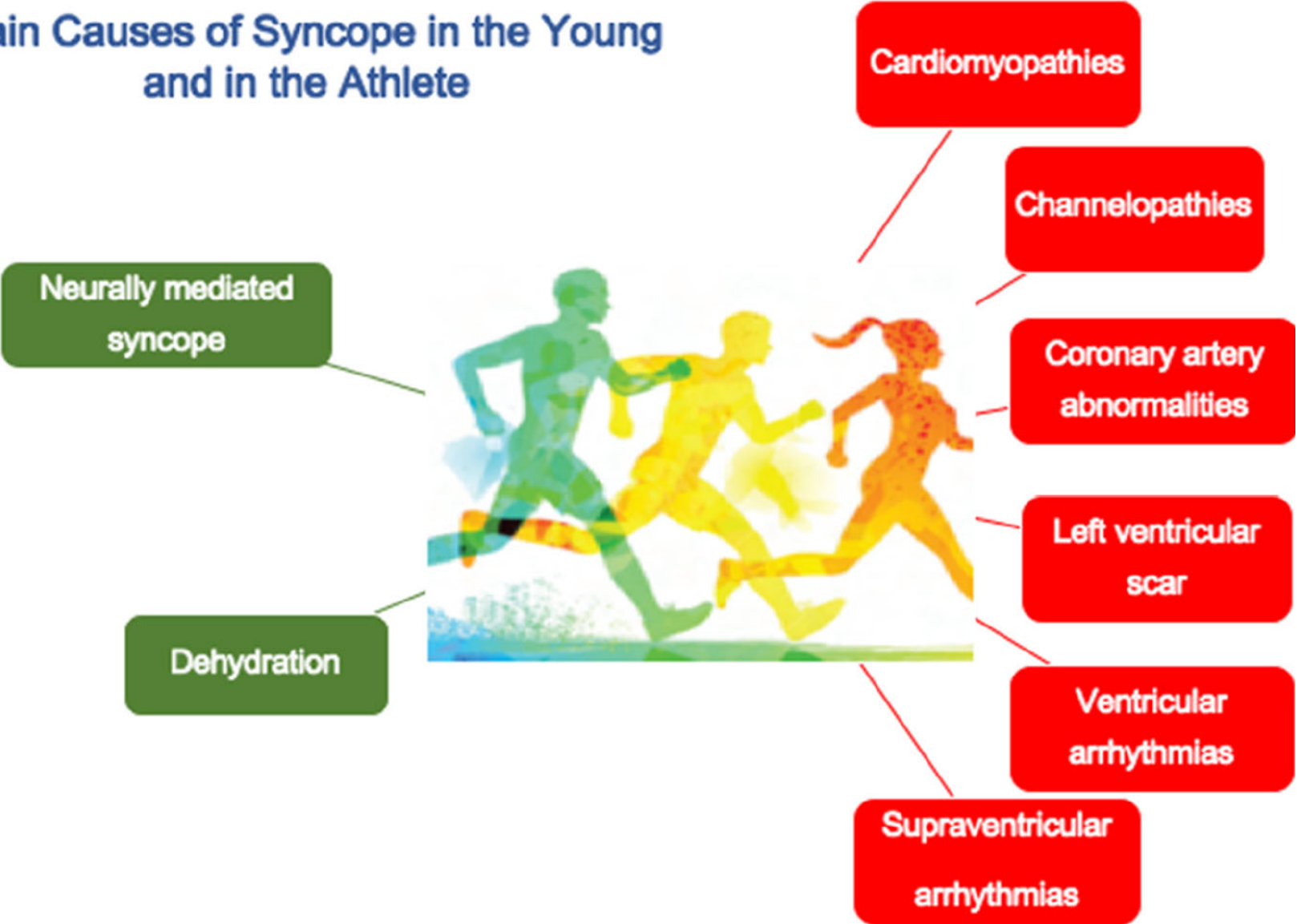
Epidemiology and prognostic implications of syncope in young competing athletes

Furio Colivicchi*, Fabrizio Ammirati, Massimo Santini



Syncope in the Young Adult and in the Athlete: Causes and Clinical Work-up to Exclude a Life-Threatening Cardiac Disease

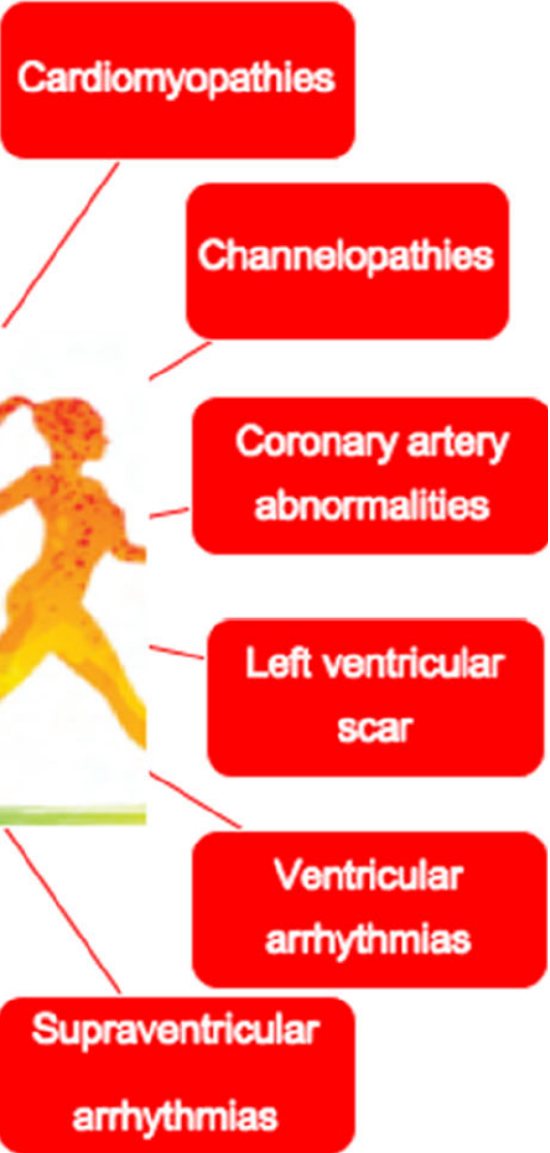
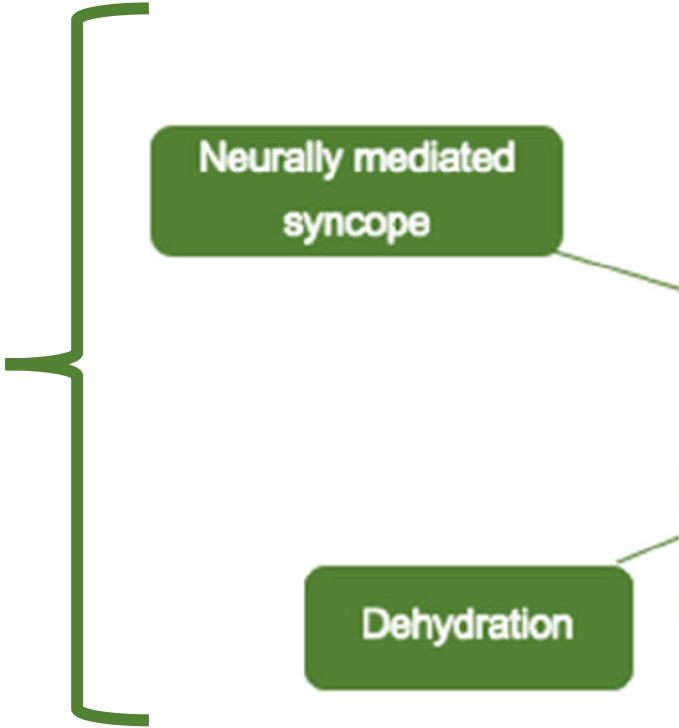
Main Causes of Syncope in the Young and in the Athlete



Syncope in the Young Adult and in the Athlete: Causes and Clinical Work-up to Exclude a Life-Threatening Cardiac Disease

Main Causes of Syncope in the Young and in the Athlete

98,7%



1,3%

2018 ESC Guidelines for the diagnosis and management of syncope

4.1.1 Diagnosis of syncope

The starting point of the diagnostic evaluation of TLOC of suspected syncopal nature is the **initial syncope evaluation**, which consists of:

- Careful history taking concerning present and previous attacks, as well as eyewitness accounts, in person or through a telephone interview.
- Physical examination, including supine and standing BP measurements.
- Electrocardiogram **(ECG)**.

SYNCOPE IN THE YOUNG AND IN THE ATHLETE



Initial evaluation:
Personal and family history, physical examination,
12-lead resting ECG



High risk features:

- Other symptoms suggestive of cardiac disease
- Family history of SCD, cardiomyopathies, or channelopathies
- Abnormalities at physical examination and/or resting ECG
- Syncope preceded by palpitations, occurring in relation with exercise, or with no prodromes/triggers



Second-line examinations

- Echocardiography
- 24-hour 12-lead ECG Holter monitoring (including training session)
 - Exercise testing (for evaluation of arrhythmias)
 - CMR (in selected cases -see text-)
 - EP-study (in selected cases -see text-)



APPROPRIATE CLINICAL MANAGEMENT
Consider sports restriction



Low risk features

- No symptoms, negative family history, normal physical examination and normal resting ECG
- Circumstances of syncope suggestive of neurally-mediated origin or secondary to dehydration



Recurrent syncope?

-

No

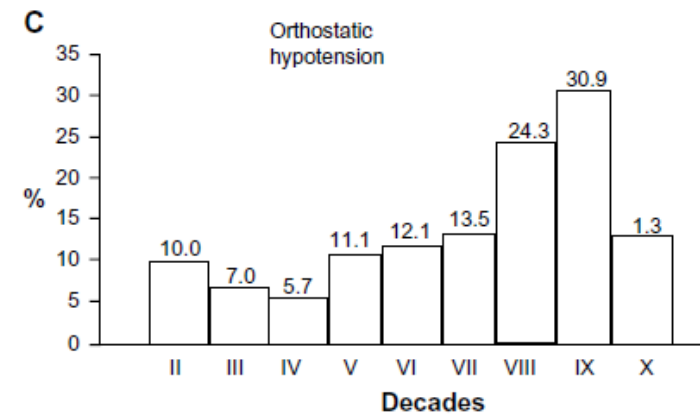
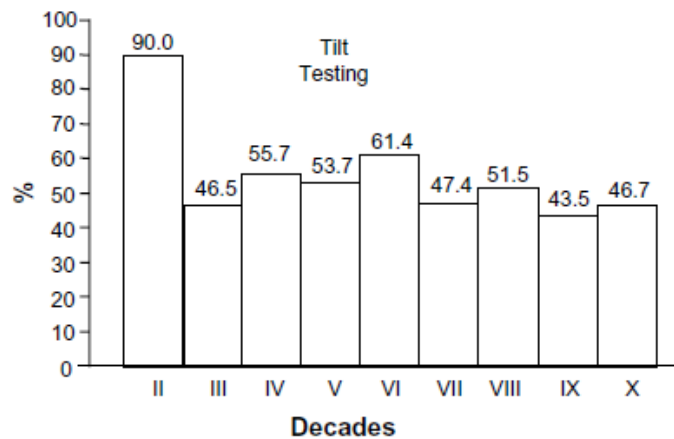
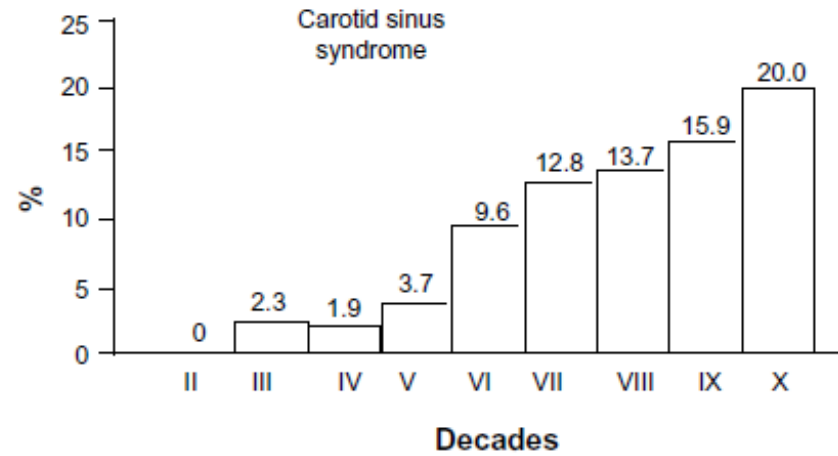
Yes

STOP
No sports restriction

**Consider tilt testing and/or
implantable loop recorder
according to current guidelines**

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Neuroautonomic evaluation in different decades

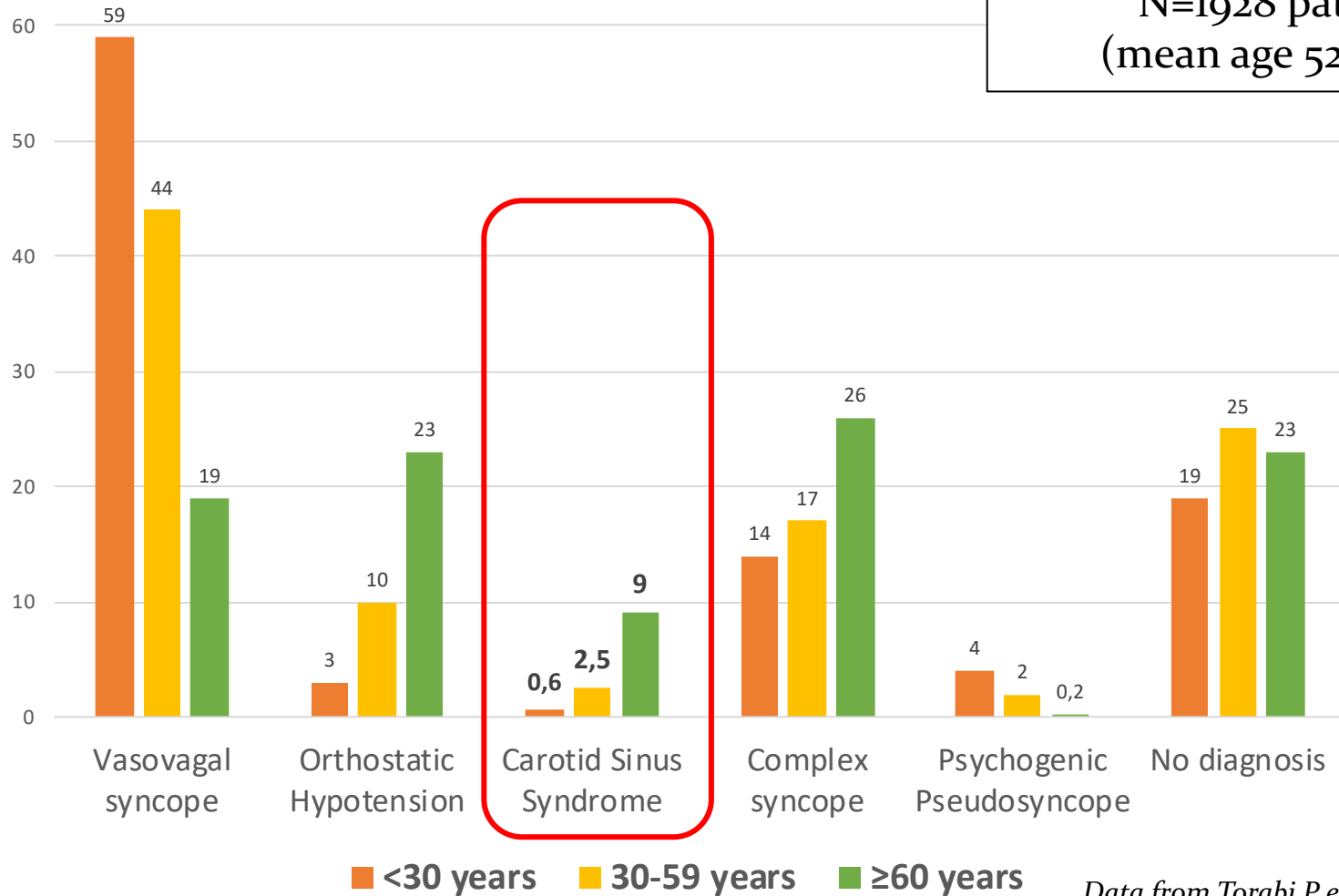




Early and late-onset syncope: insight into mechanisms

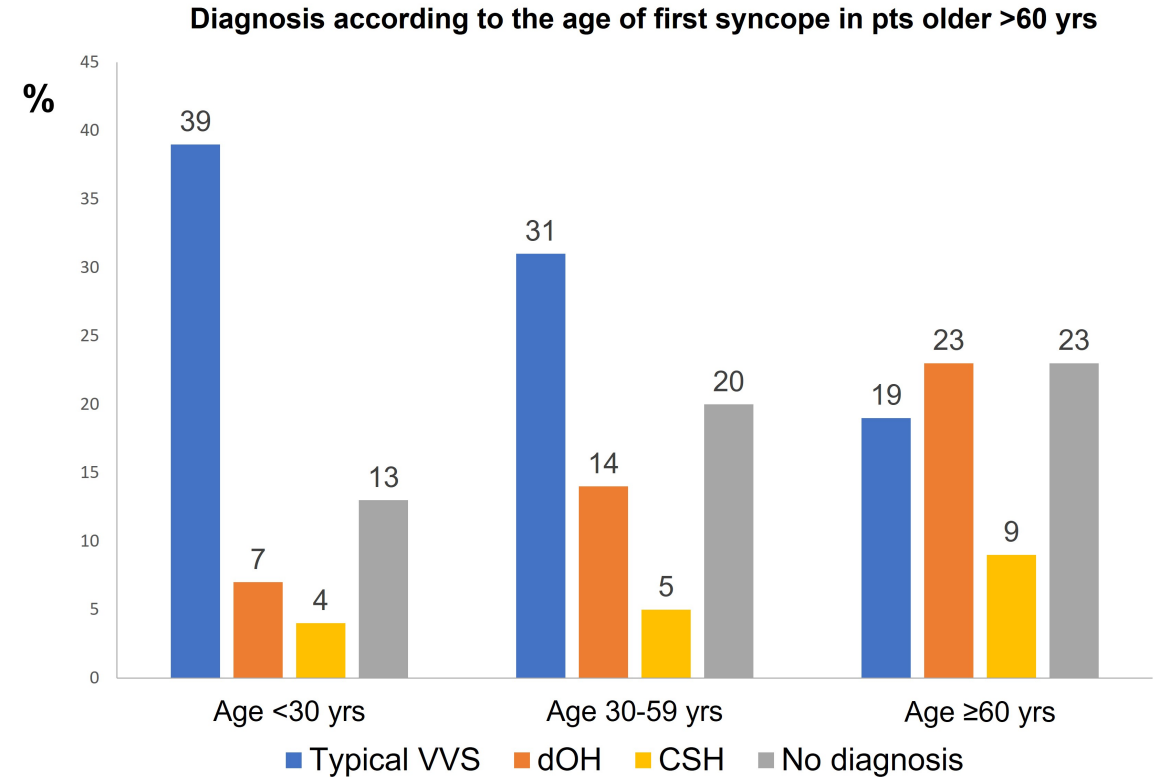
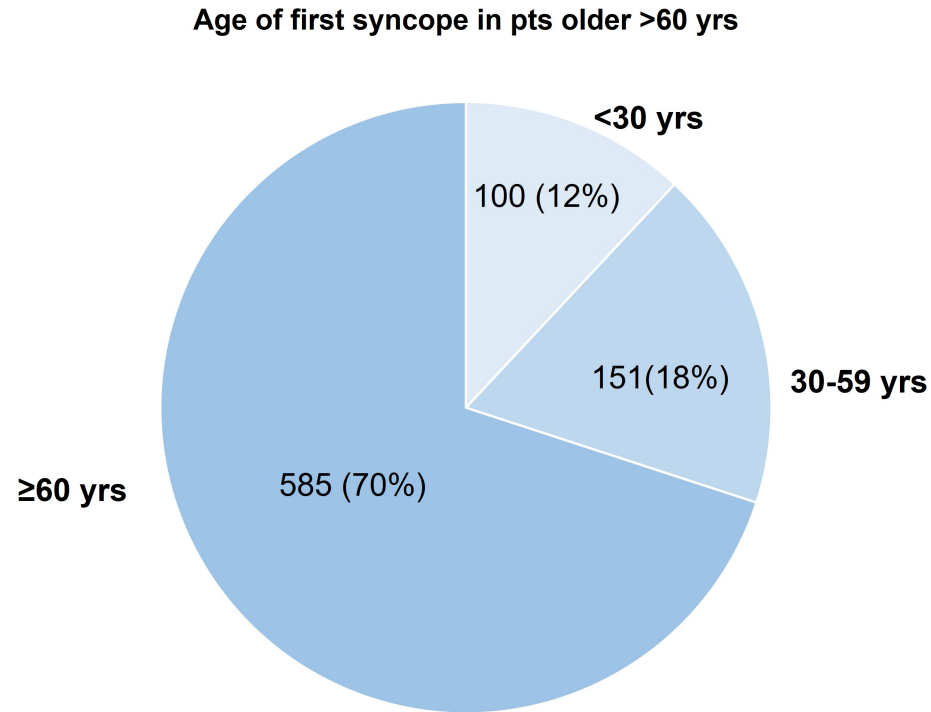
Parisa Torabi ^{1,2,*†}, Giulia Rivasi ^{3†}, Viktor Hamrefors ^{1,4}, Andrea Ungar ³, Richard Sutton ^{1,5}, Michele Brignole ⁶, and Artur Fedorowski ^{1,7,8}

Proportion of diagnoses according to the age of first-ever syncope
N=1928 patients
(mean age 52 years)



Data from Torabi P et al. Eur Heart J 2022

836 pts referred for syncope assessment after the age of 60 yrs



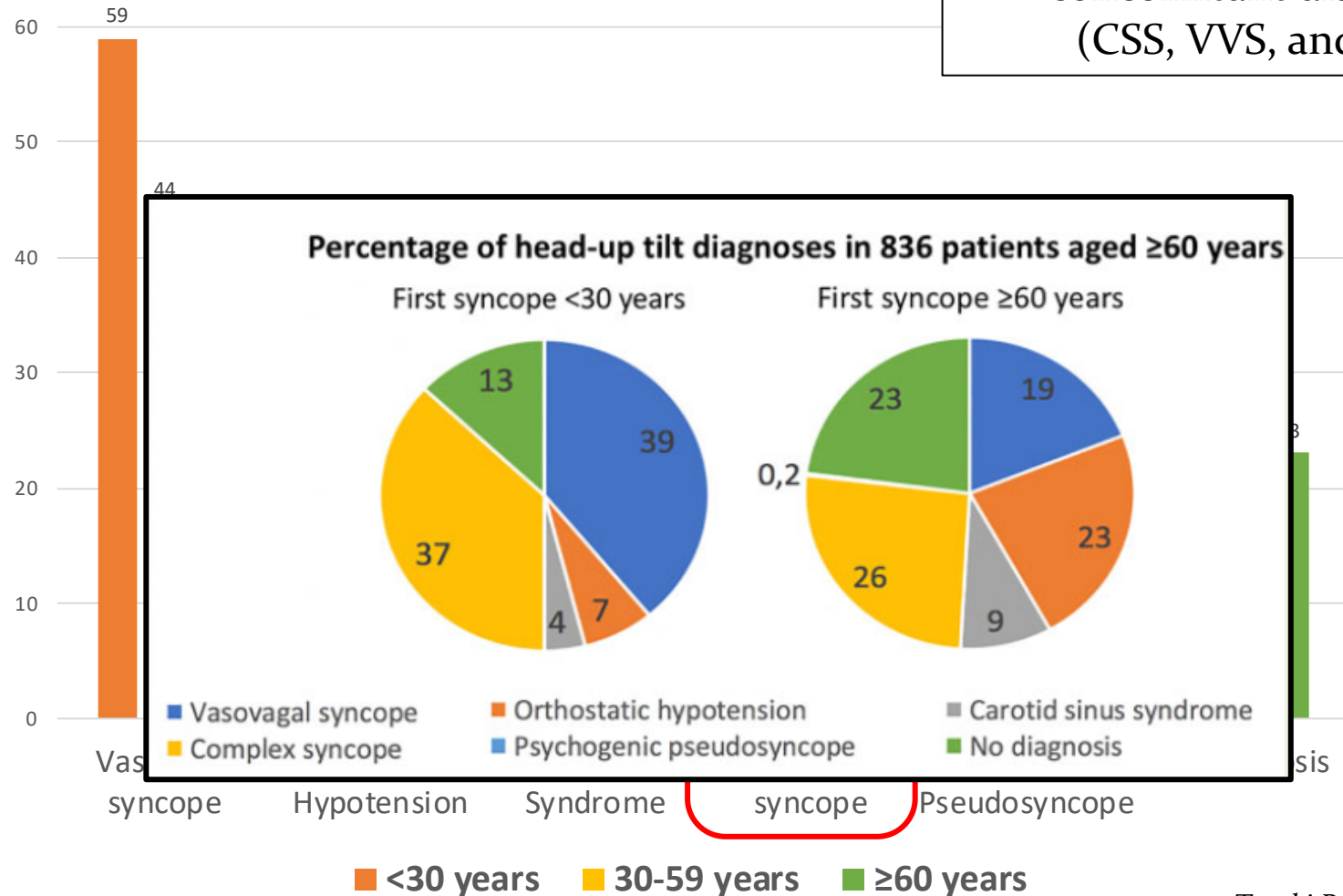
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Early and late-onset syncope: insight into mechanisms

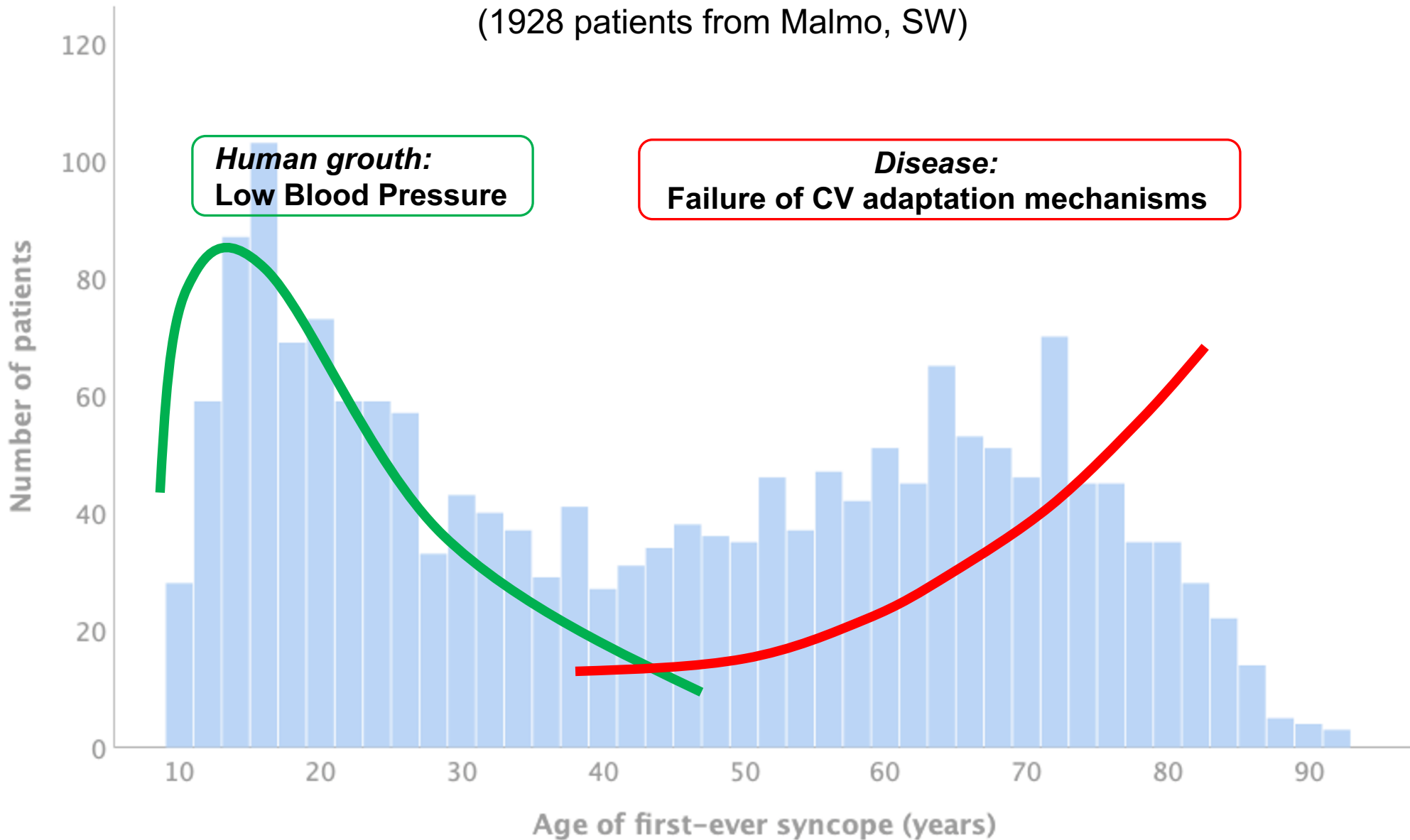
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“Complex syncope”
detection of two or more concomitant diagnoses (CSS, VVS, and OH)



Age distribution of first-ever non-cardiac syncope

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Effect of aging on baroreflex function in humans

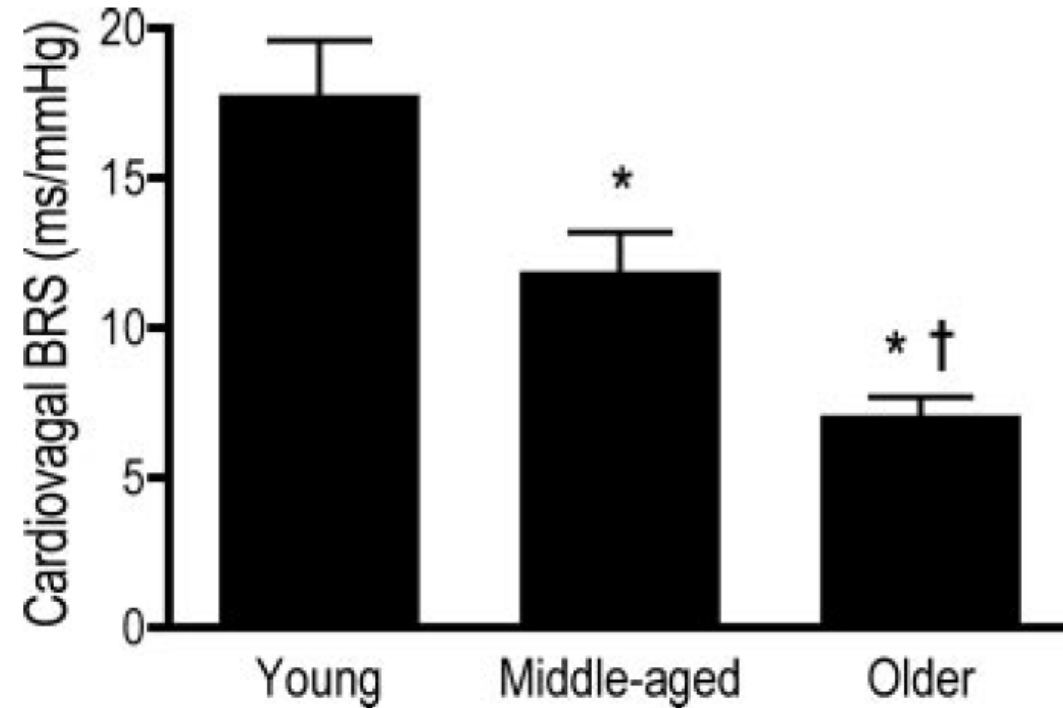
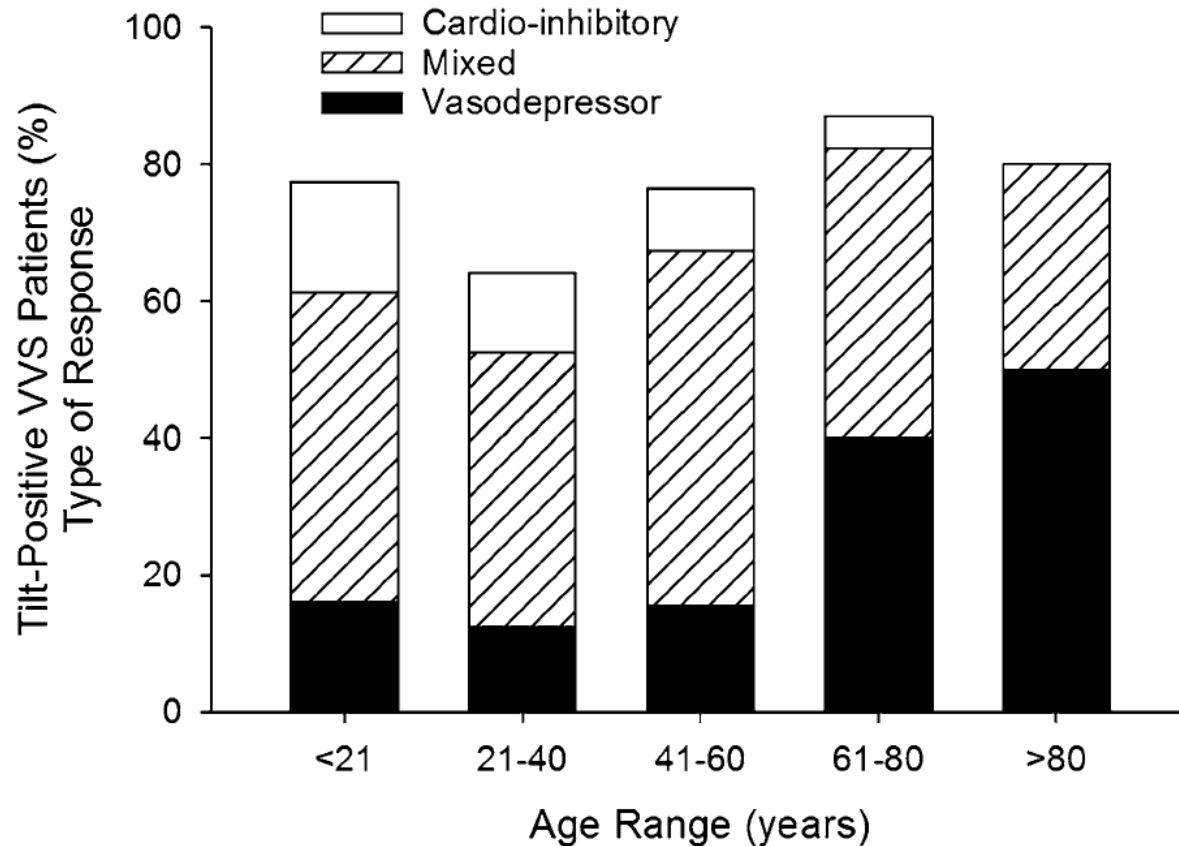


Fig. 3. Cardiovascular BRS values in young (18–37 years old), middle-aged (38–56 years old), and older adults (57–79 years old). Cardiovascular BRS declines from young to middle-aged and from middle-aged to older. Used with permission (75). * $P < 0.05$ vs. young subjects. † $P < 0.05$ vs. middle-aged.

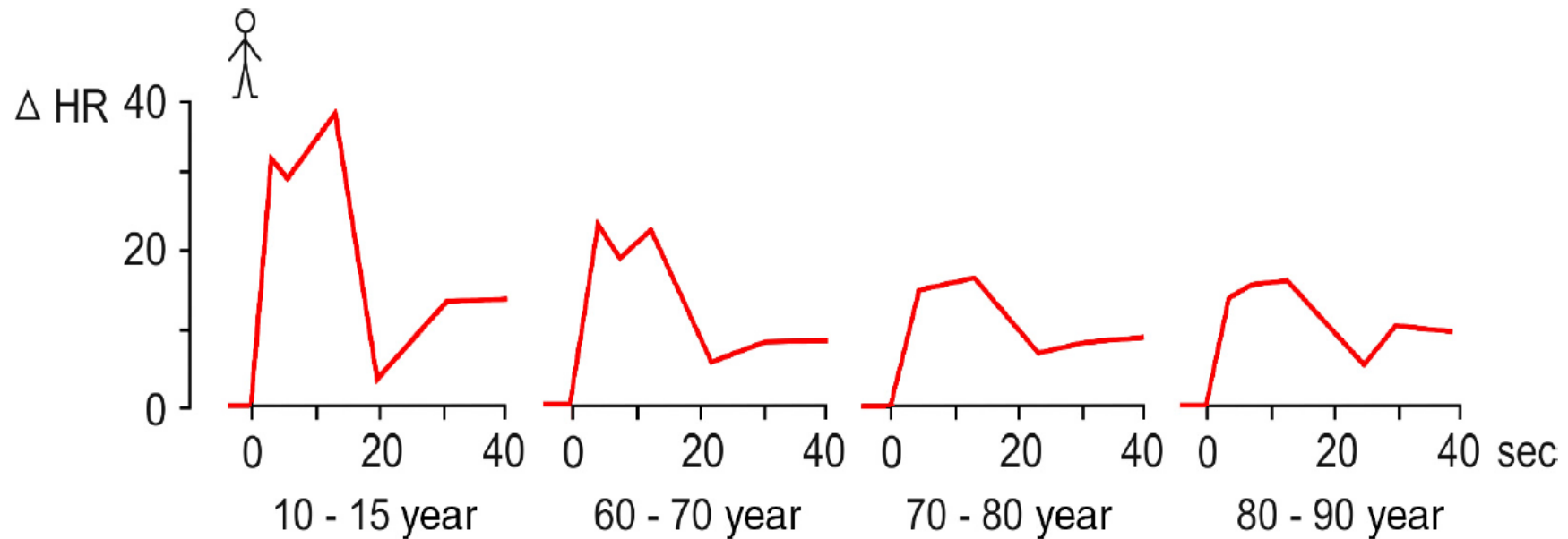
The pathophysiologic mechanisms associated with hypotensive susceptibility

Ashish Chaddha¹ · Martina Rafanelli² · Michele Brignole³ · Richard Sutton⁴ ·
Kevin E. Wenzke¹ · Stephen L. Wasmund¹ · Richard L. Page¹ · Mohamed H. Hamdan¹



Concomitant with the decrease in BRG, the prevalence of a vasodepressor response increased in older subjects.

Noninvasive beat-to-beat finger arterial pressure monitoring during orthostasis: a comprehensive review of normal and abnormal responses at different ages



the initial biphasic HR response on active standing decreases with age; the primary peak at 3 s is no longer present in old age

Cause di Sincope nella Popolazione Generale (EGSYS 2) ed in Geriatria (GIS)

	EGSYS 2*	GIS**		p*
	All (n=465)	65-75 years (n=71)	> 75 years (n=160)	
	n (%)	n (%)	n (%)	
Cardiaca	74 (16)	8 (11.3)	26 (16.3)	ns
Neuromediata	309 (66)	44 (62)	58 (36.3)	0,001
Ortostatica	46 (10)	3 (4.2)	49 (30.5)	0,001
Ce latrogena		0 (4.2)	0 (5)	/ ns
Inspiegata	11 (2)	10 (14.1)	14 (8.8)	ns

Ricerca Ipotensione Ortostatica in tutti i pazienti anziani

* Brignole M, Eur Heart J. 2006

* <75 years vs >75 years GIS

** Ungar A, JAGS 2006

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La terapia

Syncope and unexplained falls
(severe/recurrent forms) at any level of care

Exclude:

- Cardiac syncope
- Non-syncopal causes such as accidental falls, epilepsy, psychogenic pseudosyncope and other rare causes

Established non-cardiac syncope

Mechanism-based diagnosis

Mechanism-based personalized therapy

Hypotensive phenotype

Bradycardic phenotype

Low adenosine phenotype

In the healthy:
- Fludrocortisone
- Midodrine
(Class IIb)

If hypotensive drugs: Stop/reduce hypotensive drugs
(Class IIa)

In pts >40 years:
Cardiac pacing
(Class IIa/IIb)

In pts <40 years:
-Atomoxetine
-Cardioneuroablation
-Cardiac pacing

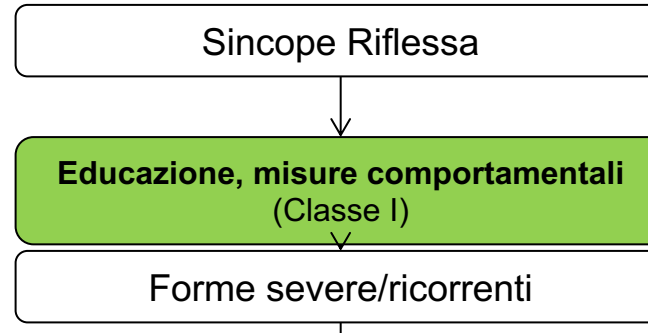
-Theophylline
-Caffeine

In the elderly:
- Compression garments
- Head-up tilt sleeping
(Class IIa)

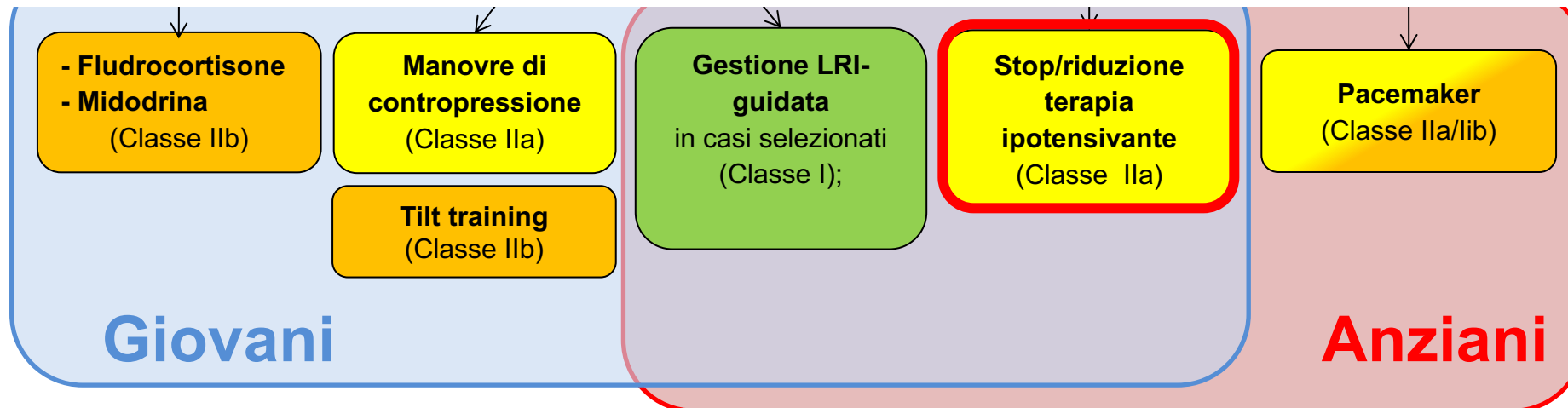
Guideline-based established therapies

Emerging evidence-based new therapies

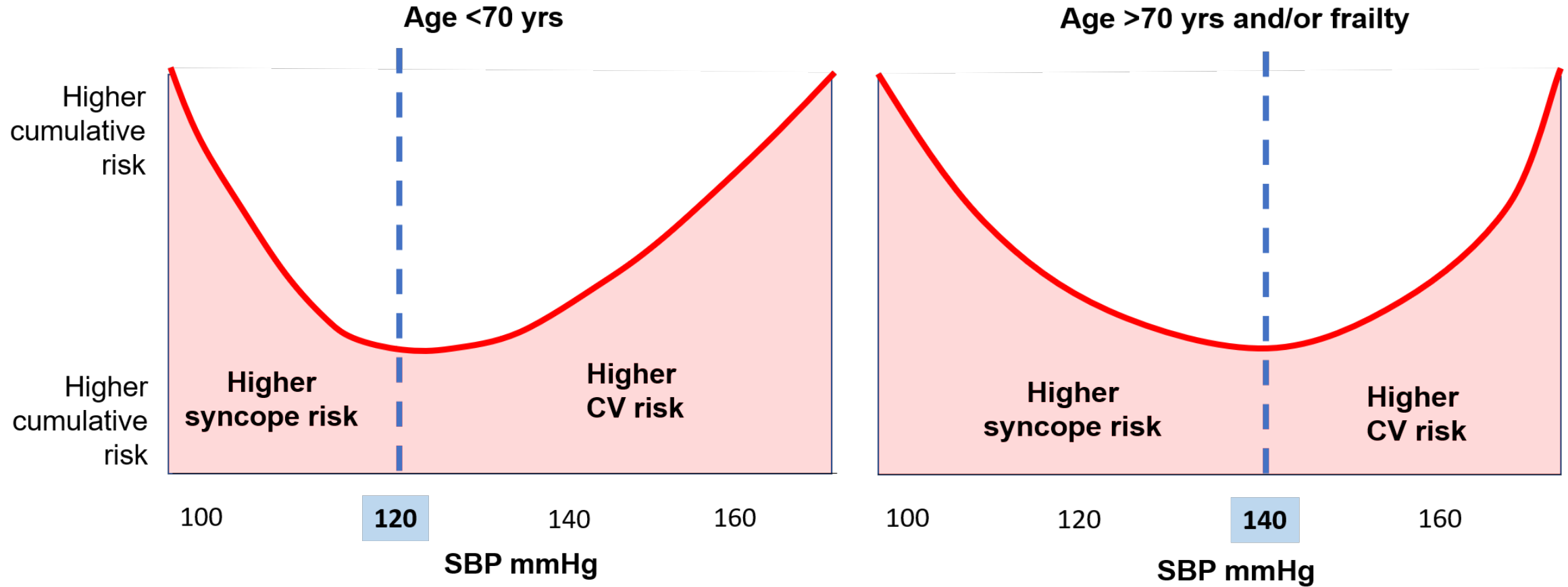
Trattamento: **sincope riflessa**



There is moderate evidence that discontinuation/reduction of hypotensive therapy targeting a systolic BP of 140 mmHg should be effective in reducing syncopal recurrences in patients with hypotensive susceptibility. Further research is likely to



Drug-related hypotension – CV and Syncope risk according to SBP



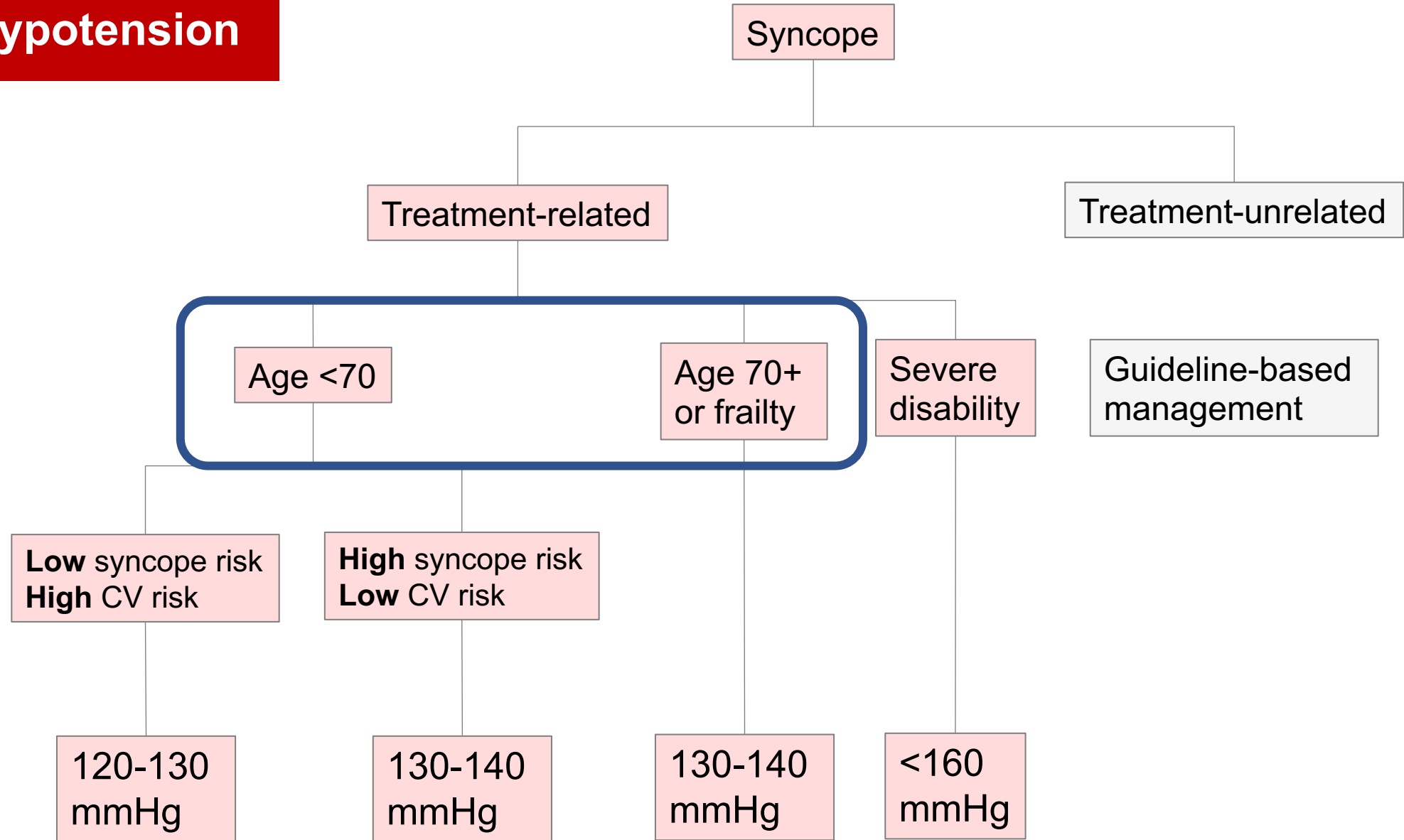
Drug-related hypotension

Assessment of syncope aetiology

Risk stratification according to age and frailty status*

Risk stratification according to the symptom burden**

Office SBP target



Hypotensive Drugs and Syncope Due to Orthostatic Hypotension in Older Adults with Dementia (Syncope and Dementia Study)

Gianluca Testa, MD, PhD,^{*} Alice Ceccofiglio, MD,^{†‡} Chiara Mussi, MD, PhD,[§]
Giuseppe Bellelli, MD, PhD,^{¶||**} Franco Nicosia, MD,^{††} Mario Bo, MD,^{‡‡} Daniela Riccio, MD,^{§§}
Francesco Curcio, MD,^{*} Anna Maria Martone, MD,^{¶¶} Gabriele Noro, MD,^{|||}
Francesco Landi, MD, PhD,^{¶¶} Andrea Ungar, MD, PhD,^{†‡} and Pasquale Abete, MD, PhD^{*}

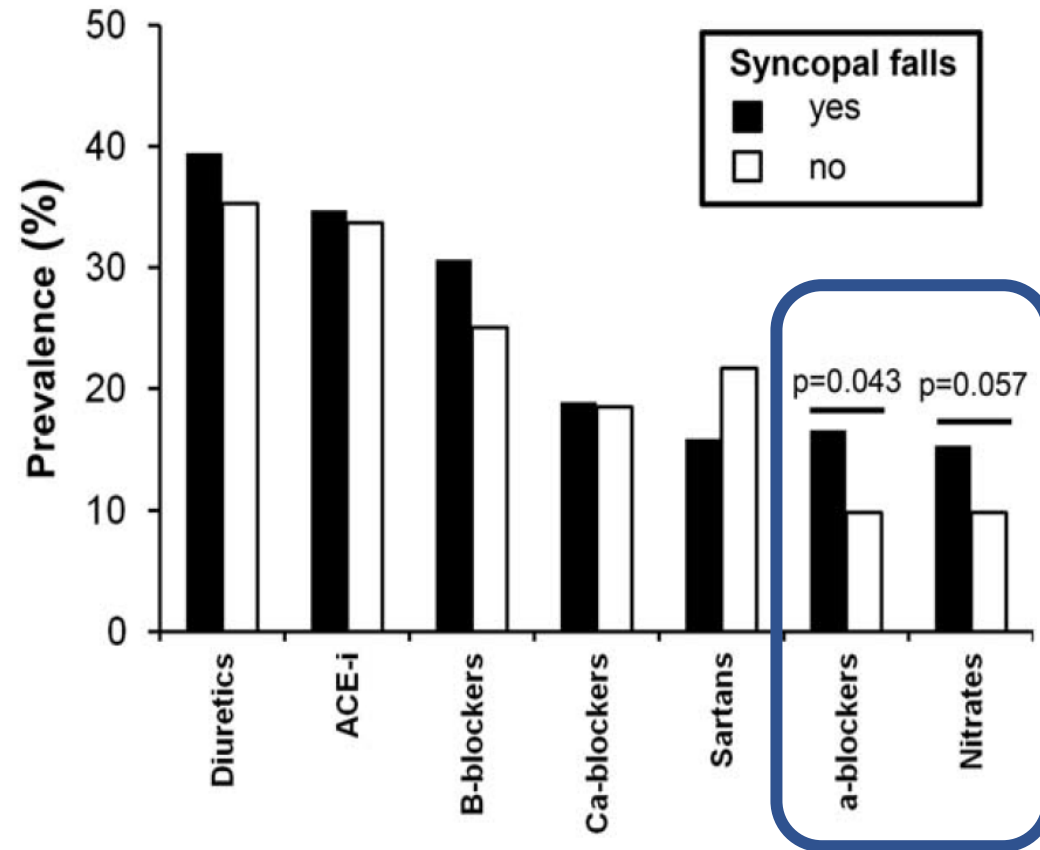


Figure 1. Prevalence of hypotensive drugs administered to participants with and without syncopal falls.

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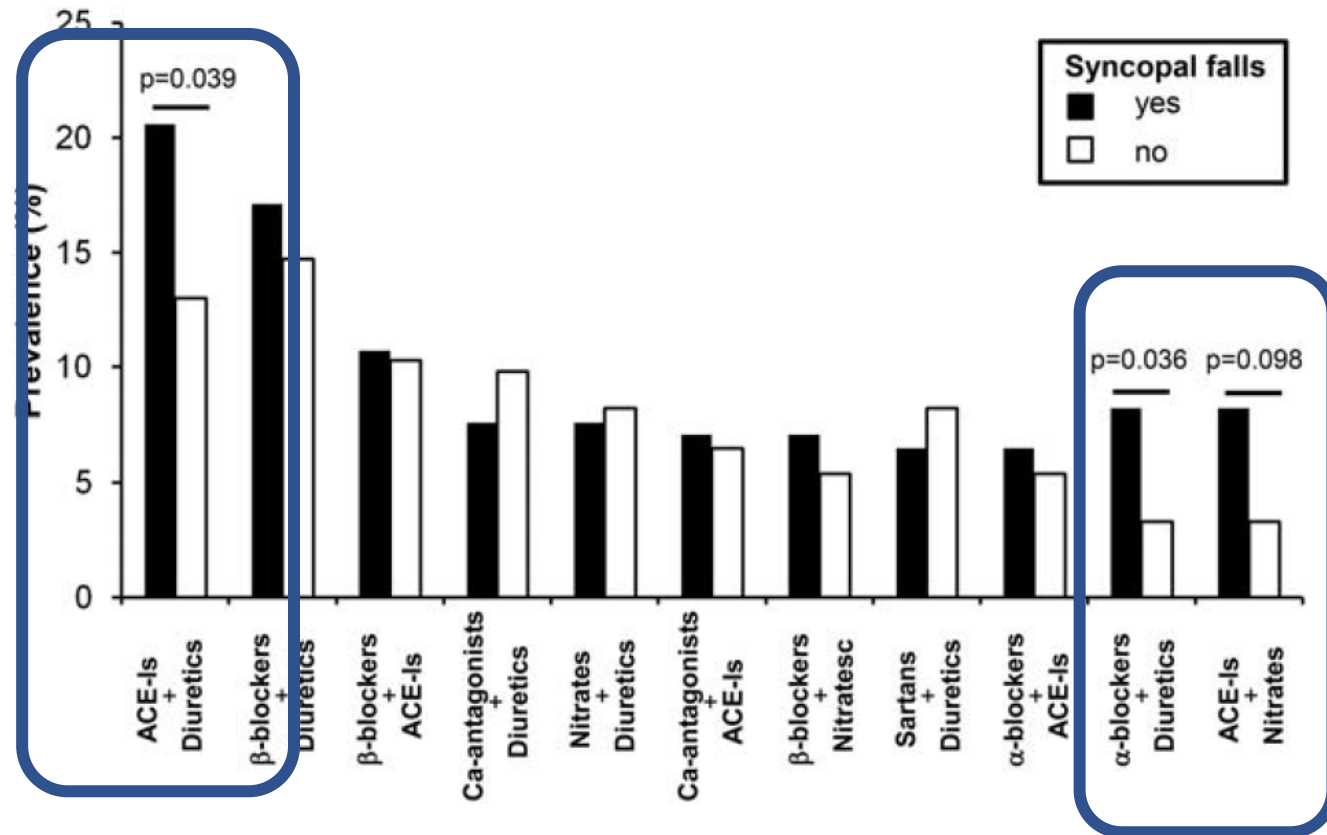


Figure 2. Prevalence of combinations of hypotensive drugs administered to participants with and without syncopal falls. ACE-Is = angiotensin-converting enzyme inhibitors.

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Il pacemaker nello forme riflesse cardioinibitorie



WARNING !!!
REFLEX SYNCOPE AND PM
PATIENTS SELECTION

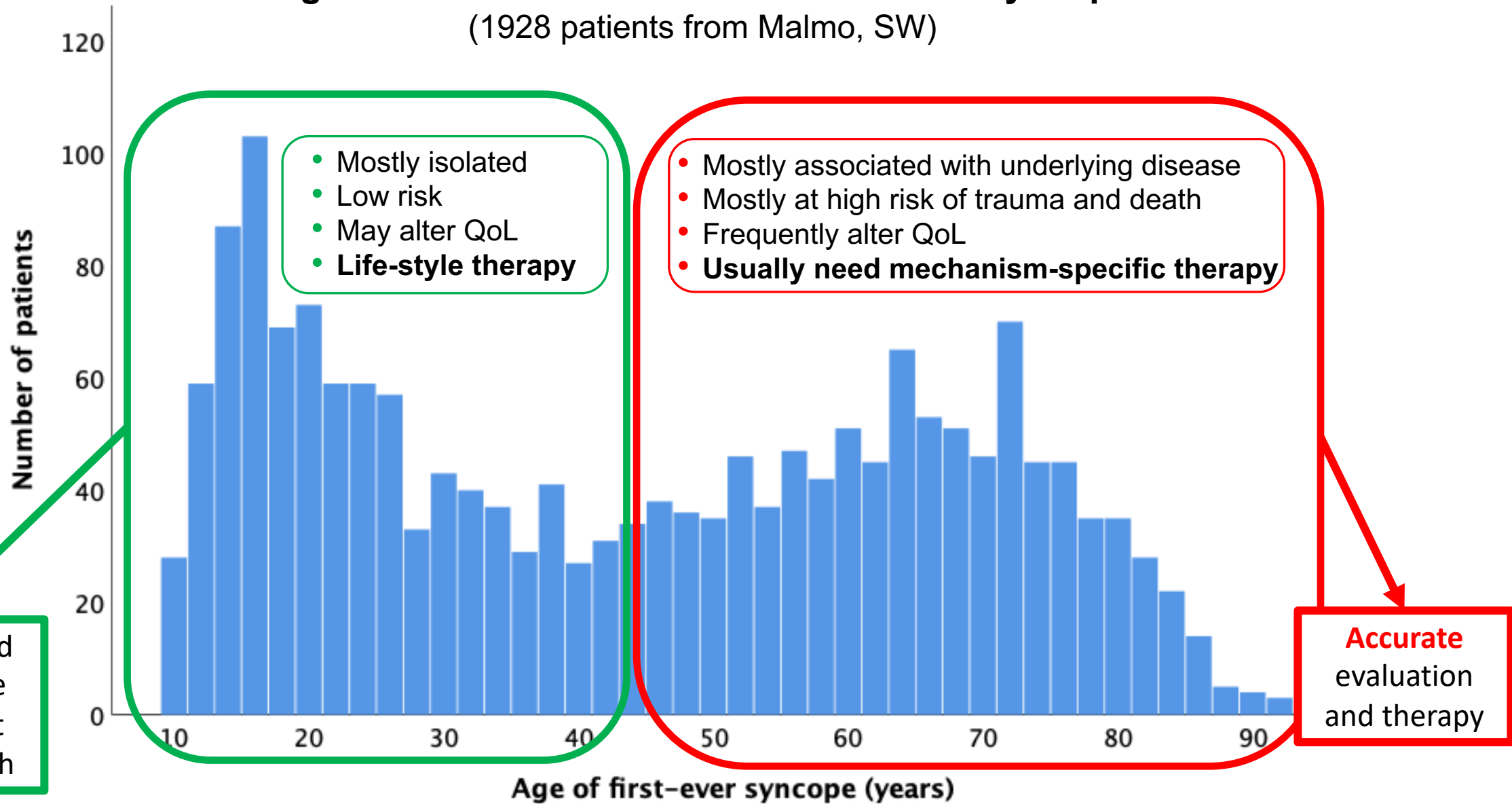
Patients must have **> 40 years** and a sufficiently **severe clinical presentation** to warrant specific treatment

High frequency or risk provided by guidelines:

- invalidated quality of life
- unpredictable syncope
- syncope exposing patients to risk of trauma
- occurrence of syncope during “high risk activity”

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Grazie per la vostra attenzione