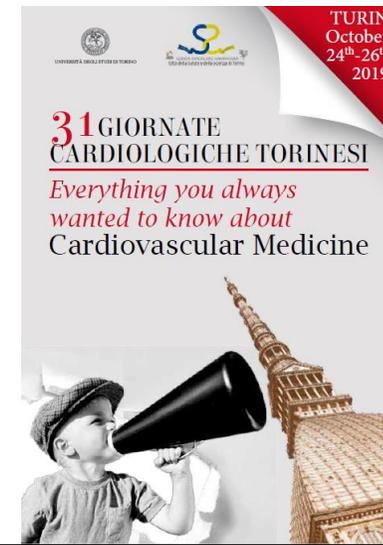


Sport and Arrhythmias: Dangerous relationship

SATURDAY October 26th 2019



Syncope in the young sportman

Michele Brignole

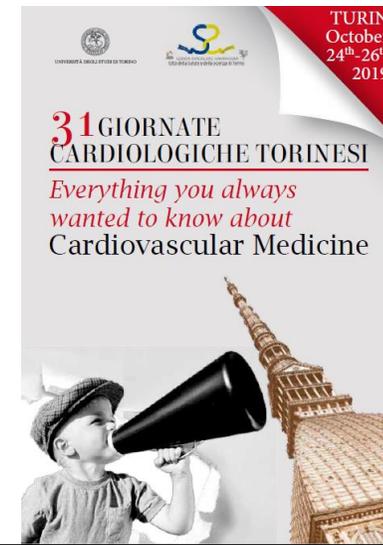
Faint & Fall programme

IRCCS Istituto Auxologico, Milan, It



Sport and Arrhythmias: Dangerous relationship

SATURDAY October 26th 2019



Syncope in the young sportman A (non-conformist) perspective from a “syncopologist”

Michele Brignole

Faint & Fall programme

IRCCS Istituto Auxologico, Milan, It



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TURIN
October
24th-26th
2019

Syncope in the young sportman

- Are athletes more likely to have syncope than general population?
- Syncope during exercise and syncope not related to exercise
- Does sport activity increase the risk of life-threatening syncope? Is syncope predictive of SCD?



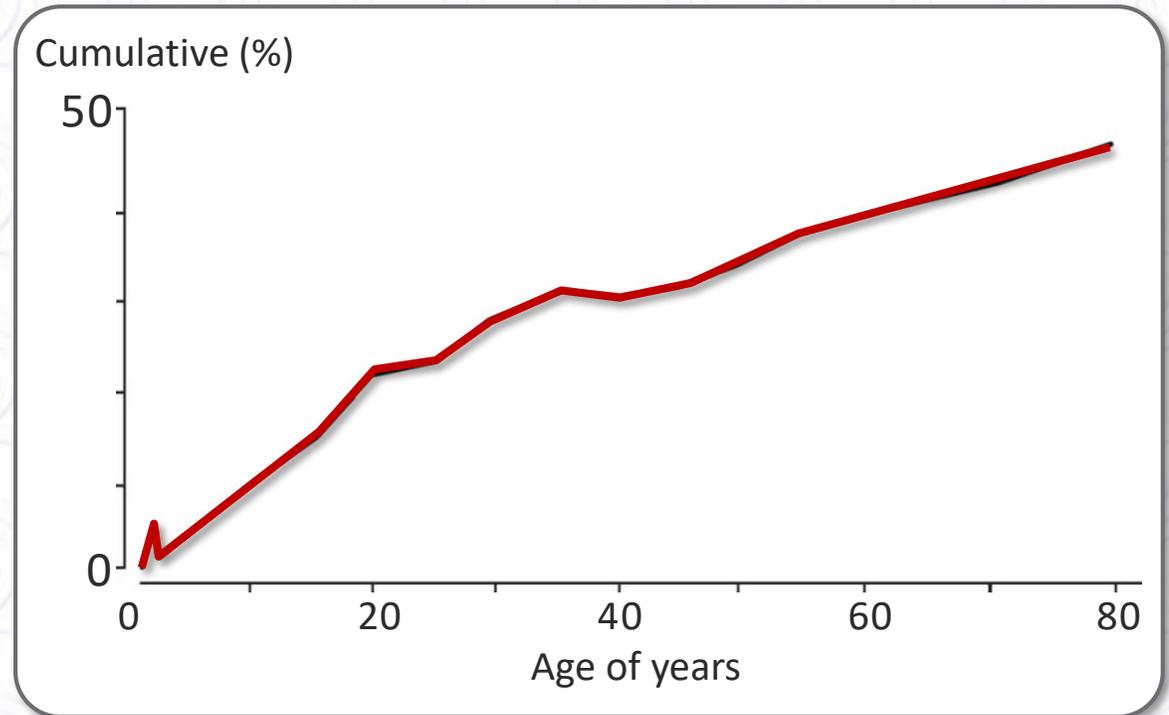
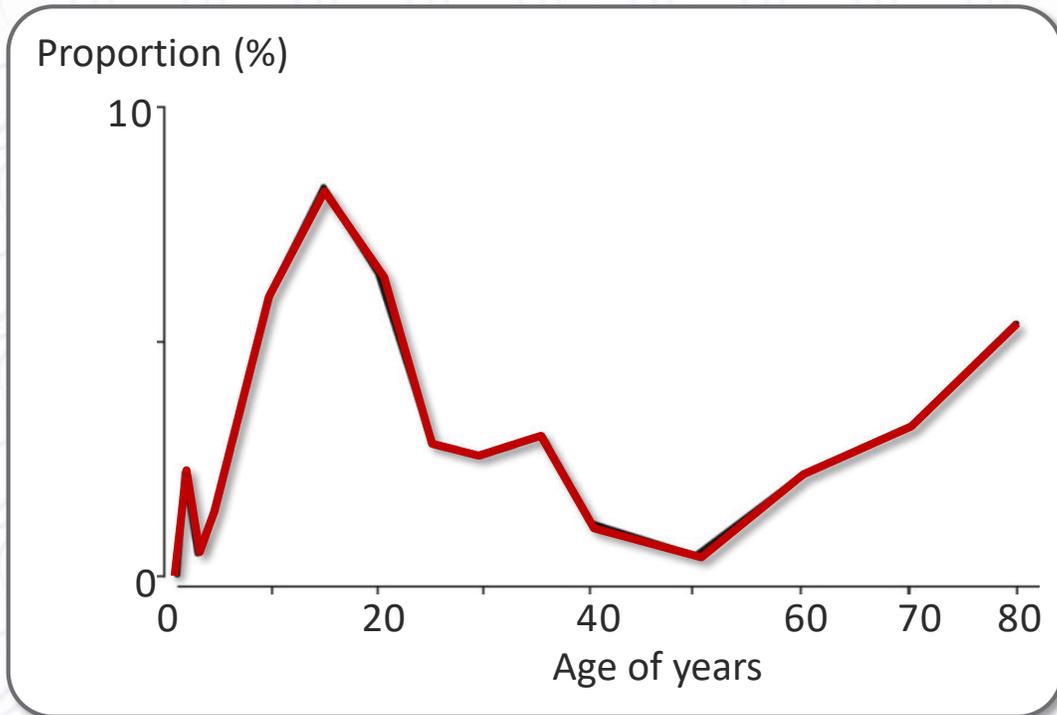
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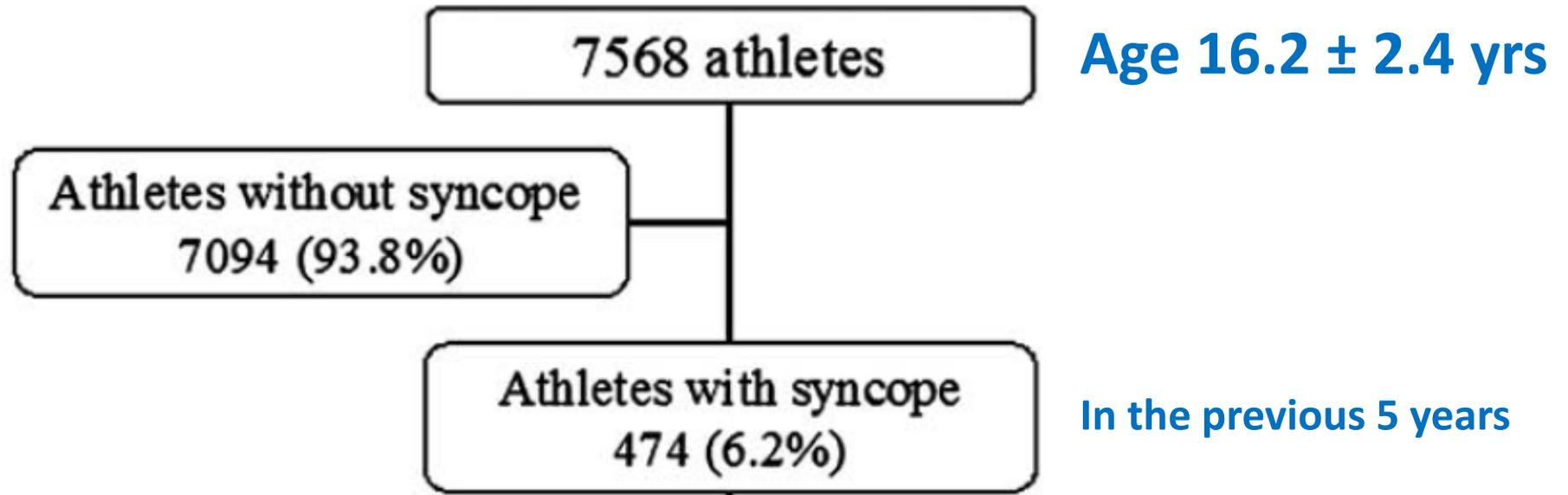
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Age of first faint



Epidemiology



Symptoms, diagnoses, and sporting consequences among athletes referred to a Danish sports cardiology clinic

L. V. Kaiser-Nielsen, S. G. Tischer, E. B. Prescott, H. K. Rasmussen

Epidemiology

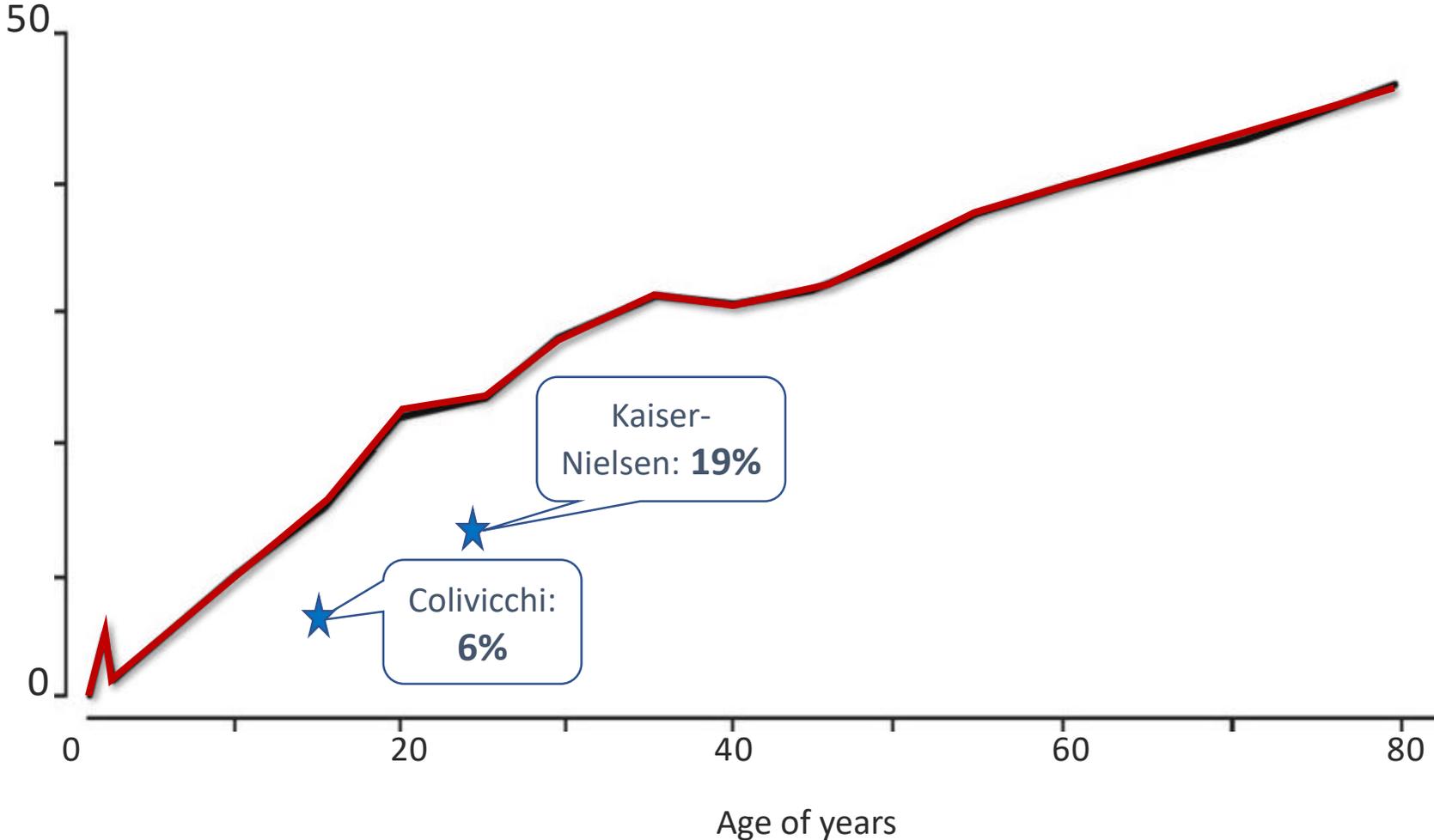
201 athletes referred to Sport Cardiology Clinic
for suspected cardiac symptoms or signs

Syncope in 38 (19%)

Mean age: 26 yrs

Epidemiology

Cumulative (%)





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EGSYS score

Clinical predictors of cardiac syncope at initial evaluation in patients referred urgently to a general hospital: the EGSYS score

A Del Rosso,¹ A Ungar,² R Maggi,³ F Giada,⁴ N R Petix,¹ T De Santo,⁵ C Menozzi,⁶ M Brignole³

Table 3. Predictors of cardiac cause of syncope on multivariable analysis and point scores for the diagnosis of cardiac syncope

Variable	P	OR	CI	Regression coefficient	Score
Palpitations preceding syncope	.00001	64.8	8.9-469.8	4.2	4
Heart disease &/or abnormal ECG	.000001	11.8	7.7-42.3	2.9	3
Syncope during effort	.0001	17	4.1-72.2	2.8	3
Syncope while supine	.0069	7.6	1.7-33.0	2.0	2
Autonomic prodromes ^o	.02	0.4	0.2-0.9	0.8	-1
Precipitating and/or predisposing factors*	.01	0.3	0.1-0.8	-1.1	-1

* Warm, crowded place/ prolonged orthostasis/fear-pain-emotion. ^o Nausea/vomiting/sweating/cold

Exercise-related syncope

During exercise & cardiac abnormalities	Cardiac syncope
During exercise, no cardiac abnormalities	Neurally-mediated
Immediately after exercise	Neurally-mediated



Risk stratification (at the initial evaluation)

High risk

Unexplained syncope and....

- **Indication for ICD or PM** (independently of a definite diagnosis of the cause of syncope)
- **Severe structural or coronary heart disease**
- **Arrhythmic syncope likely**
 - ✓ Syncope during exertion or supine
 - ✓ Palpitations at the time of syncope
 - ✓ Heart failure or low EF
 - ✓ NSVT
 - ✓ BBB
 - ✓ Sinus bradycardia <50 bpm
 - ✓ AV block
 - ✓ WPW, long QT, ARVD, Brugada
- **Important comorbidities**
(severe anemia, electrolyte disturbances, etc)

Immediate in-hospital evaluation or early intensive evaluation and treatment

Exercise-related syncope in young competitive athletes without evidence of structural heart disease
Colivicchi et al. Eur Heart J; 2002, 23. 1125-1130

Patients:

- **33 competitive athletes**
- **no structural heart disease**
- **syncope during effort (n=17) or after effort (n=16)**

Results:

- **final diagnosis: neurally-mediated**
- **24% recurrence rate at 3 years**
- **no clinical event, no injury**

Conclusion:

- **Benign condition**

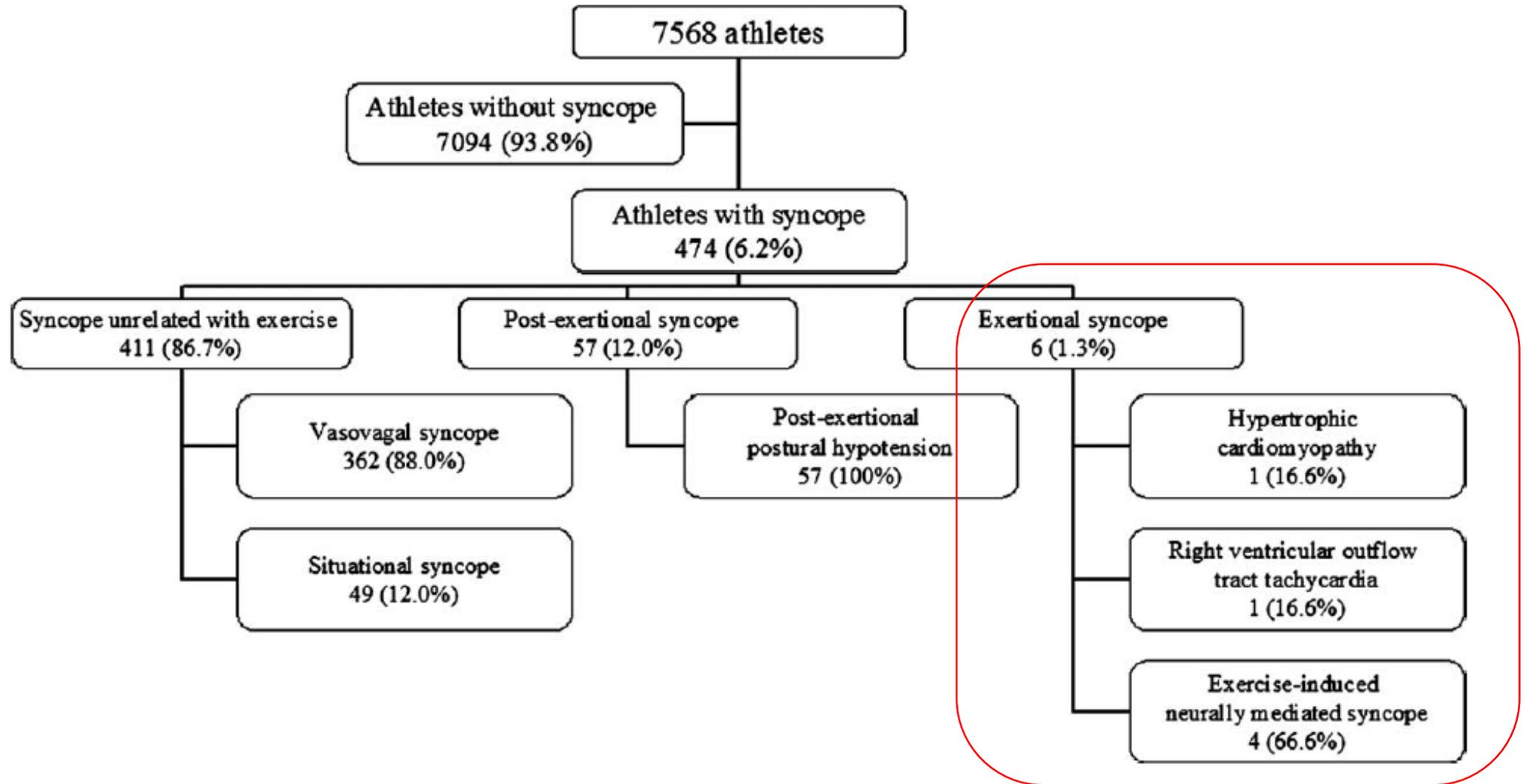
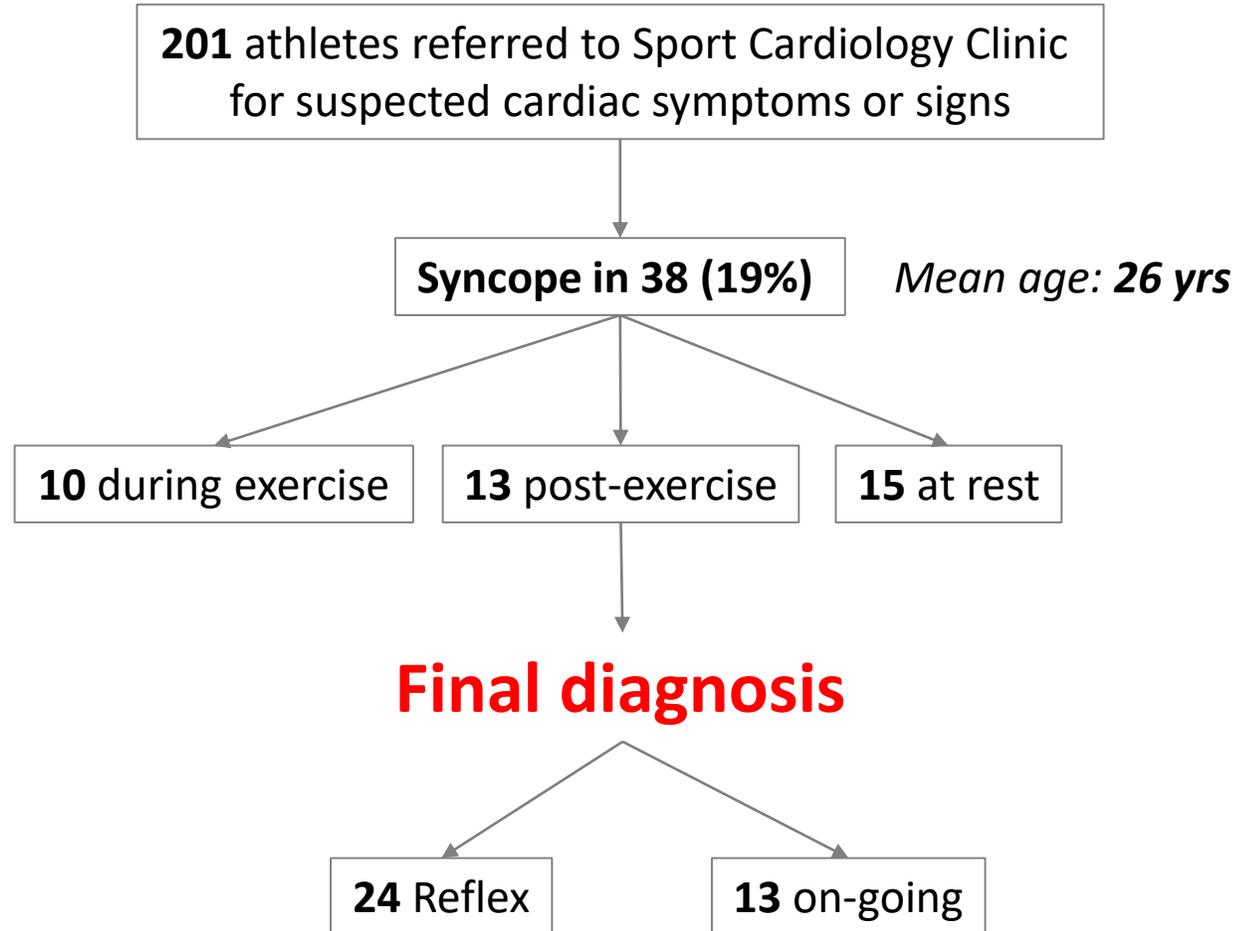
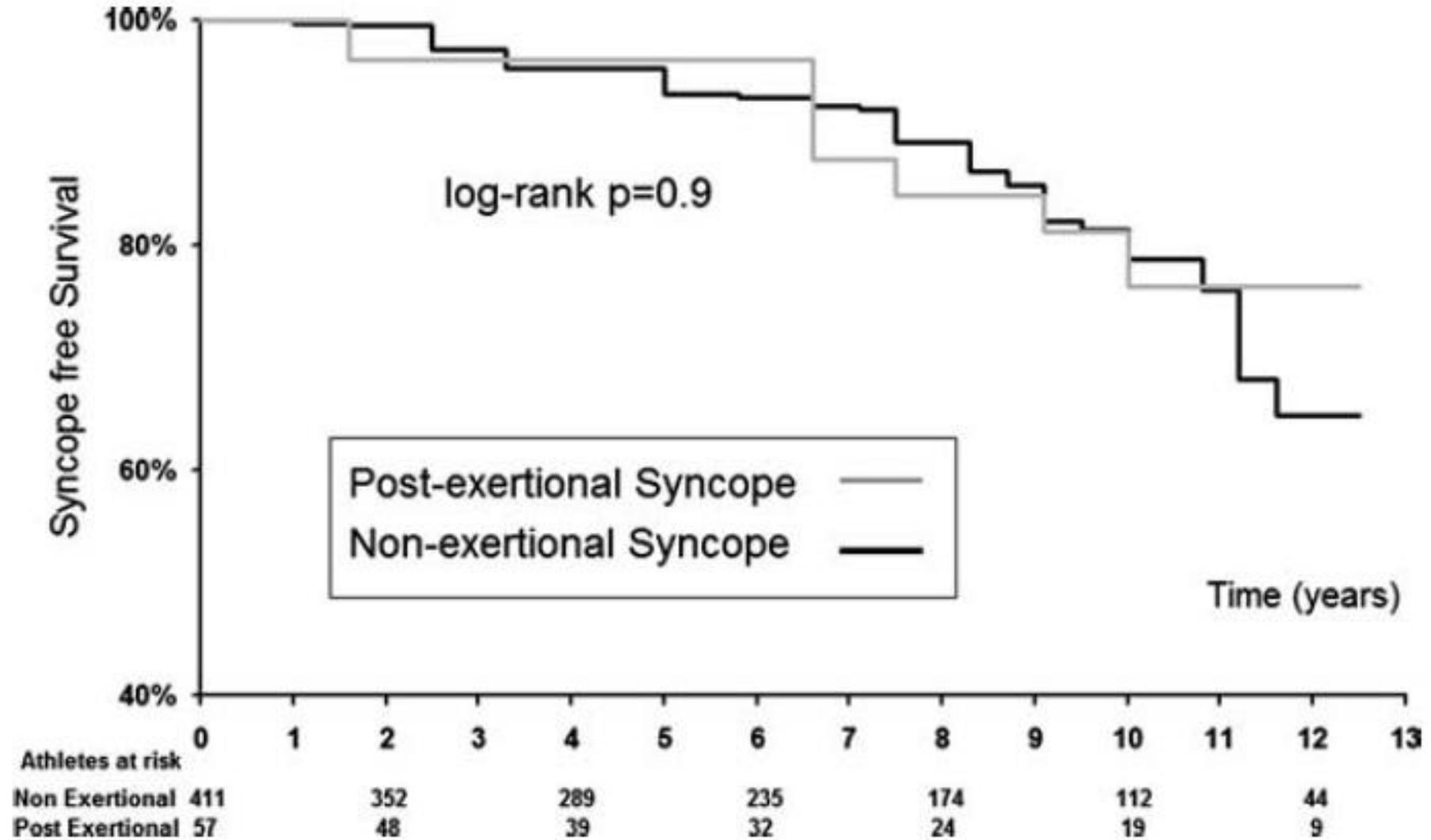


Fig. 1 Results of the diagnostic work-up in the study population.

Risk stratification



Recurrence of syncope



Editorials

Exercise-related syncope: are athletes different from sedentary subjects?

In conclusion:

- In the absence of **structural heart disease**, syncope occurring during or immediately after exercise is invariably a benign condition, either in athletes or in the sedentary population;
- The aetiology is likely to be neurally-mediated irrespective of the result of tilt testing.
- There is no reason to consider athletes different from sedentary subjects.
- The absence of **structural heart disease** is the strongest predictor of good outcome.

**Protocolli cardiologici per
il giudizio di idoneità
allo sport agonistico
2017**

COCIS 2017

L' idoneità puo' essere concessa :

- Nelle sincopi neuromediate
- Nelle sincopi ortostatiche

E' tuttavia consigliabile prudenza negli sport a rischio
intrinseco

L'idoneita' va negata:

- Nelle sincopi cardiogene (aritmiche e non)





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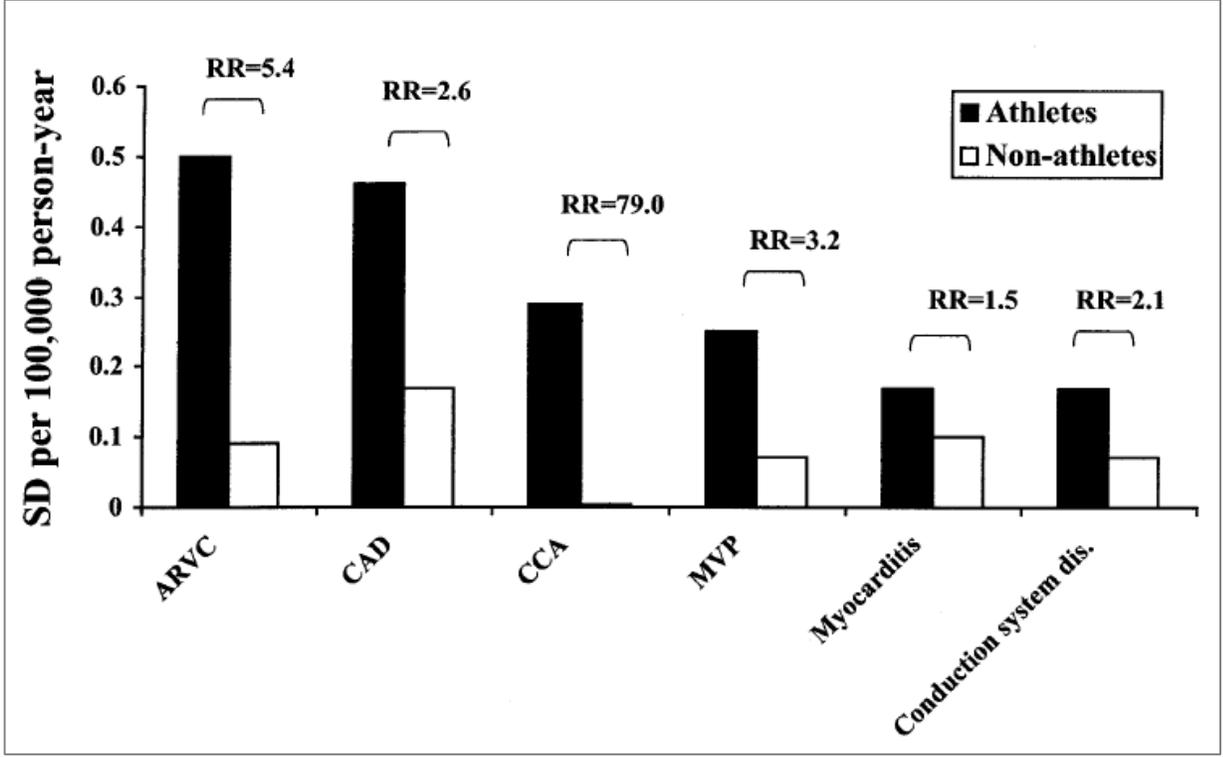
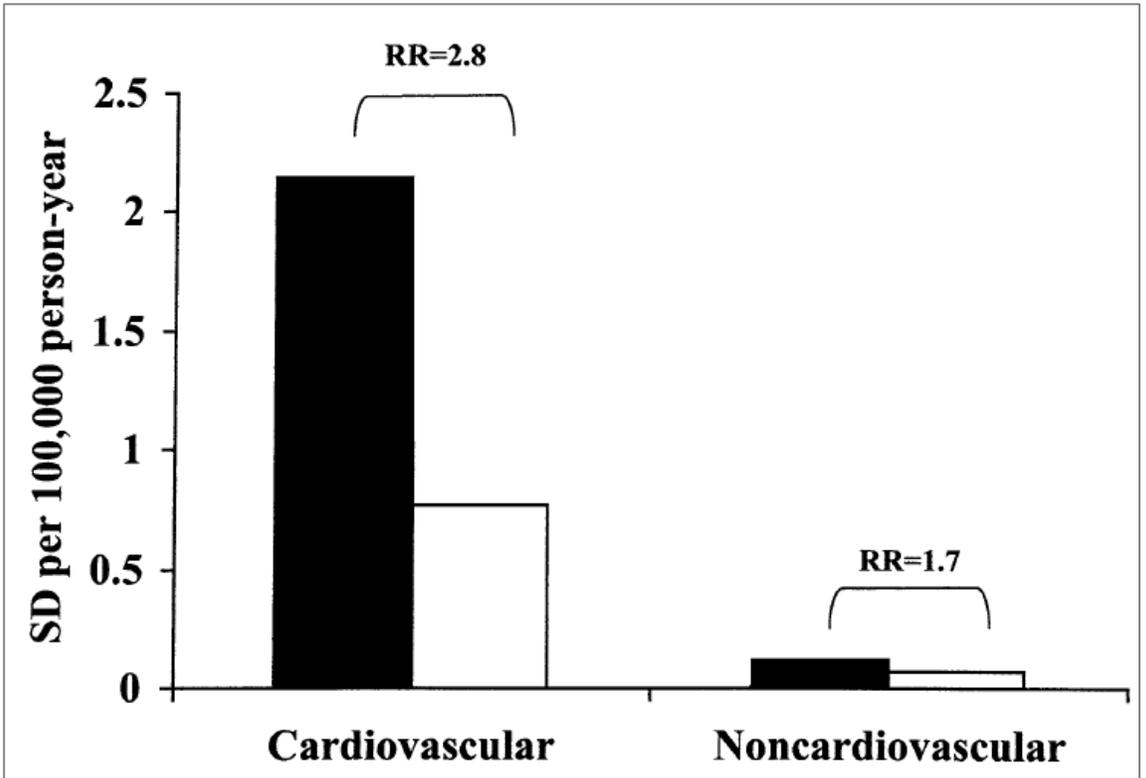
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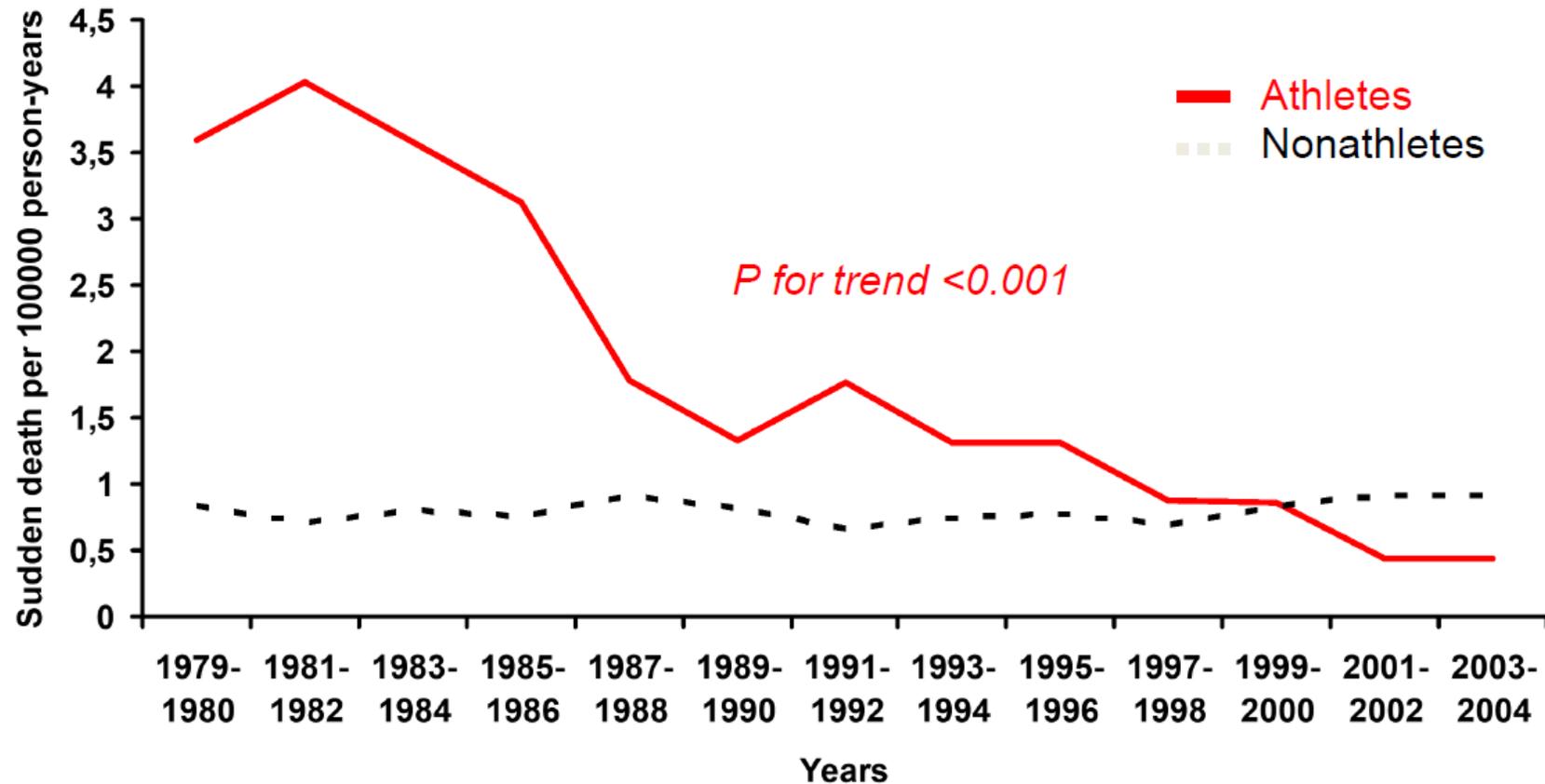
Does Sports Activity Enhance the Risk of Sudden Death in Adolescents and Young Adults?

Domenico Corrado, MD, PhD,* Cristina Basso, MD, PhD,† Giulio Rizzoli, MD,‡ Maurizio Schiavon, MD,§ Gaetano Thiene, MD†

J Am Coll Cardiol 2003; 42:1959–63)

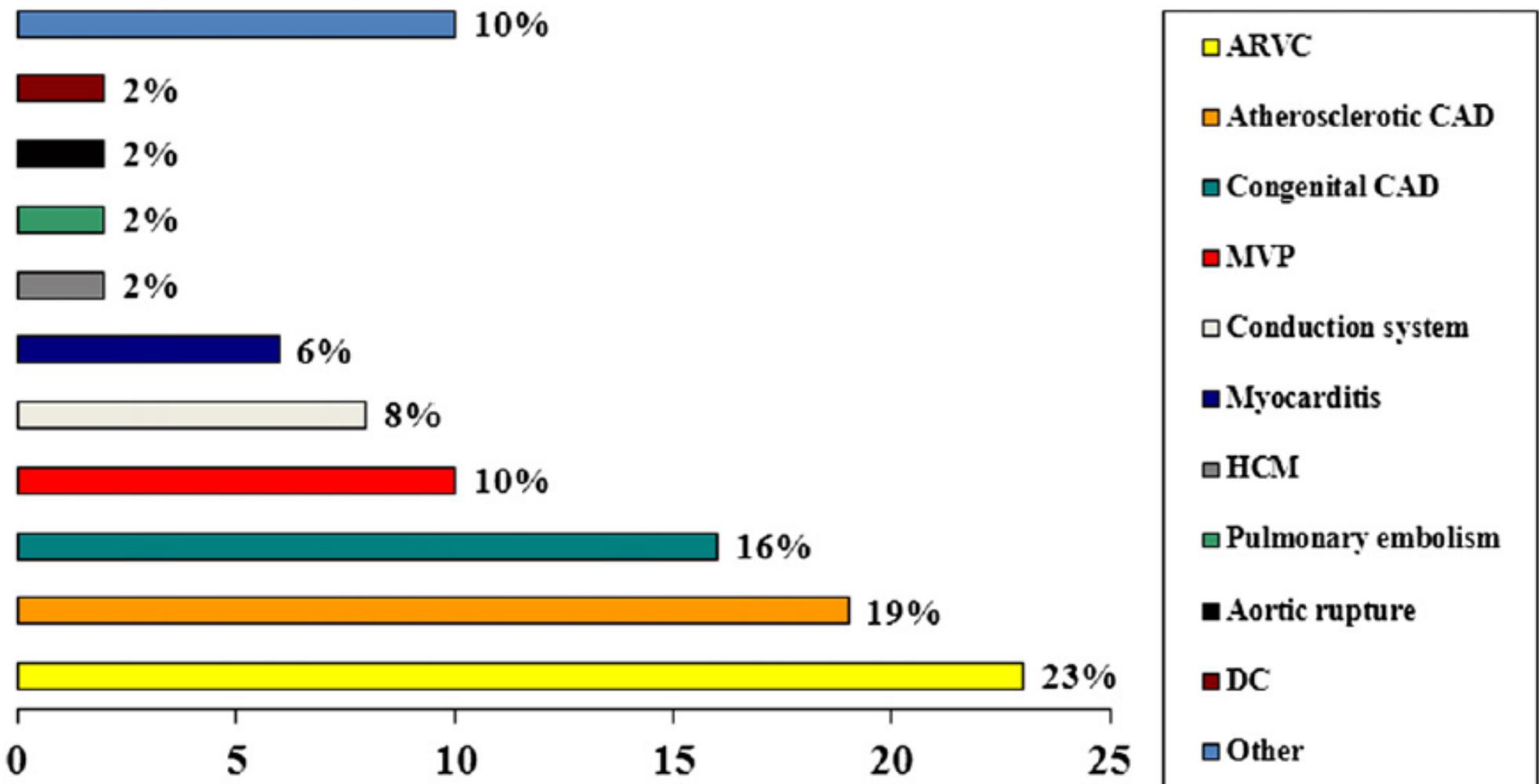


Annual Incidence Rates of Sudden Cardiovascular Death in Screened Competitive Athletes and Unscreened Nonathletes Aged 12 to 35 Years in the Veneto Region of Italy (1979-2004)



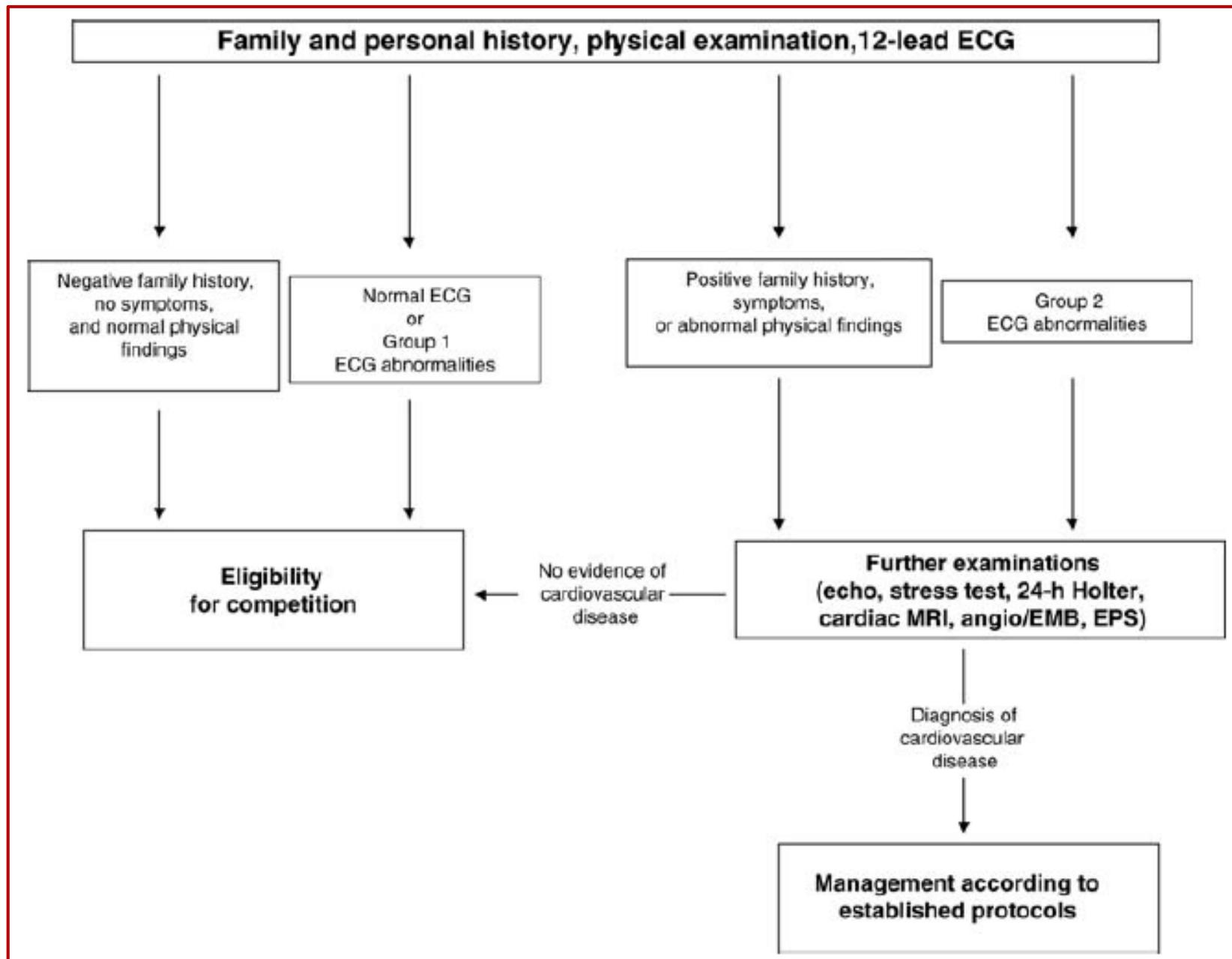
Pathologic Substrates of Sudden Cardiac Death During Sports

Cristina Basso, MD, PhD^{a,*}, Elisa Carturan, PhD^a,
Kalliopi Pilichou, PhD^a, Stefania Rizzo, MD^a,
Domenico Corrado, MD, PhD^b, Gaetano Thiene, MD^a



Recommendations for interpretation of 12-lead electrocardiogram in the athlete

Corrado et al. Eur Heart J 2010; 31: 243



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Domenico Corrado, MD, PhD,* Cristina Basso, MD, PhD,† Giulio Rizzoli, MD,‡
Maurizio Schiavon, MD,§ Gaetano Thiene, MD†

Is syncope predictive of SCD ?

Table 1. Characteristics of Sudden Death Victims

	Athletes (n = 55)	Non-Athletes (n = 245)	p Value
Mean age (yrs)	23.1 ± 7	23.9 ± 9	1.0
Gender			
Males	50	170	0.002
Females	5	75	
Circumstances of death			
Exercise-related	49 (89%)	22 (9%)	< 0.0001
During effort	40	15	
After effort	9	7	
Unrelated to exercise	6 (11%)	225 (91%)	
Medical history			
Familial history of SD	5 (9%)	27 (11%)	0.8
Previous symptoms	18 (32%)	56 (23%)	0.2
ECG abnormalities/ arrhythmias	22 (40%)	36/63 (57%)	0.1

Is syncope predictive of SCD ?

- **Syncope occurred in 17%** in a cohort of 29 young athletes who died suddenly

(Maron Circulation 1980)



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Syncope in the young sportman: TAKE HOME MESSAGES

- Structural heart disease and not syncope is the strongest predictors of SCD
- The presence of SHD should be carefully ruled-out
- In absence of SHD, syncope during exercise is a benign condition
- The management of syncope in athletes should be the same as for a sedentary subjects.

At the onset, **syncope** resembles **sudden death**.
The difference is that the patient recovers from
the first, not from the latter

Anonymous