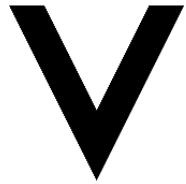


Il nuovo protocollo Italiano: Tilt FAST



- Università degli Studi della Campania
- *Luigi Vanvitelli*



Vincenzo Russo MD PhD MMSc FAIAC FISC

Laboratorio di Elettrofisiologia e Cardiolazione

UOC Cardiologia e UTIC – Università degli studi della Campania “Luigi Vanvitelli”

Ospedale Monaldi – Napoli





ESC

European Society
of Cardiology

European Heart Journal (2021) **42**, 1654–1660

doi:10.1093/eurheartj/ehab084

STATE OF THE ART REVIEW

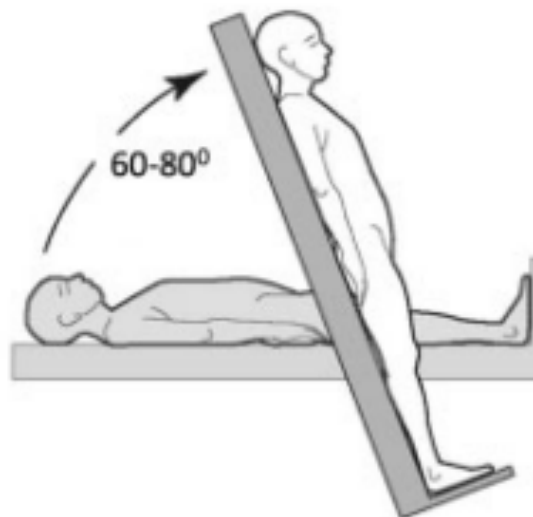
Arrhythmias

Tilt testing remains a valuable asset

Richard Sutton ^{1*}, **Artur Fedorowski** ², **Brian Olshansky** ³, **J. Gert van Dijk**⁴,
Haruhiko Abe⁵, **Michele Brignole** ⁶, **Frederik de Lange** ⁷, **Rose Anne Kenny**⁸,
Phang Boon Lim⁹, **Angel Moya**¹⁰, **Stuart D. Rosen**¹¹, **Vincenzo Russo**¹²,
Julian M. Stewart ¹³, **Roland D. Thijs** ⁴, and **David G. Benditt**¹⁴

Diagnostic Utility in VVS

1. **Reproducing Spontaneous Symptoms**
2. **Identifying Haemodynamic Features**
 - a. Mixed
 - b. Cardioinhibitory
 - c. Vasodepressor
3. **Understanding Contributions of Brady/Asystole vs Vasodepression to LoC**



Typical Tilt-Test Recordings

1. ECG
2. Beat-to-beat BP
3. **Others on Selected Basis**
 - a. EEG
 - b. Video
 - c. Measures of Cerebral Perfusion

Utility in Symptom Management

1. **Warning Symptom Recognition**
 - a. Understanding Importance and Nature of Prodromes
 - b. Initiate Protective Movement
2. **Therapy Intervention**
 - a. Reassurance
 - b. Counter-pressure Manoeuvres
 - c. Potential Pacing Utility



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European Journal of Internal Medicine

journal homepage: www.elsevier.com/locate/ejim



The clinical presentation of syncope influences the head-up tilt test responses

Vincenzo Russo^{a,*}, Erika Parente^a, Angelo Comune^a, Nunzia Laezza^a, Anna Rago^a,
Paolo Golino^a, Gerardo Nigro^a, Michele Brignole^b

^a Cardiology and Syncope Unit, Department of Translational Medical Sciences, University of Campania "Luigi Vanvitelli" – Monaldi Hospital, Naples, Italy

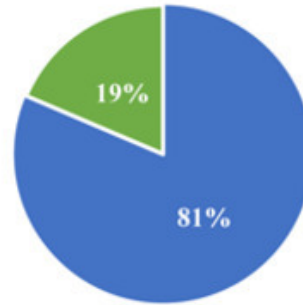
^b IRCCS Istituto Auxologico Italiano, Faint & Fall programme, Cardiology Unit and Department of Cardiovascular, Neural and Metabolic Sciences, S. Luca Hospital, Milan, Italy



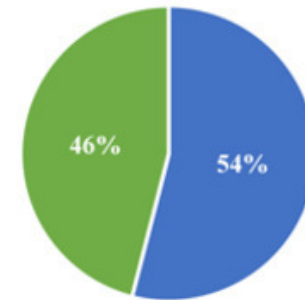
1285 patients
(45 ± 19.1 years; 49.6% male)



627 patients (48.8%)
with classical VVS

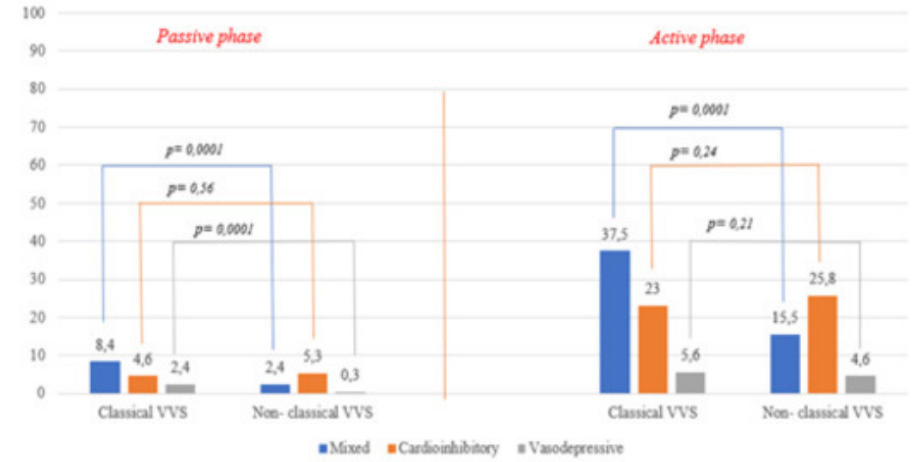


■ Positive HUTT ■ Negative HUTT

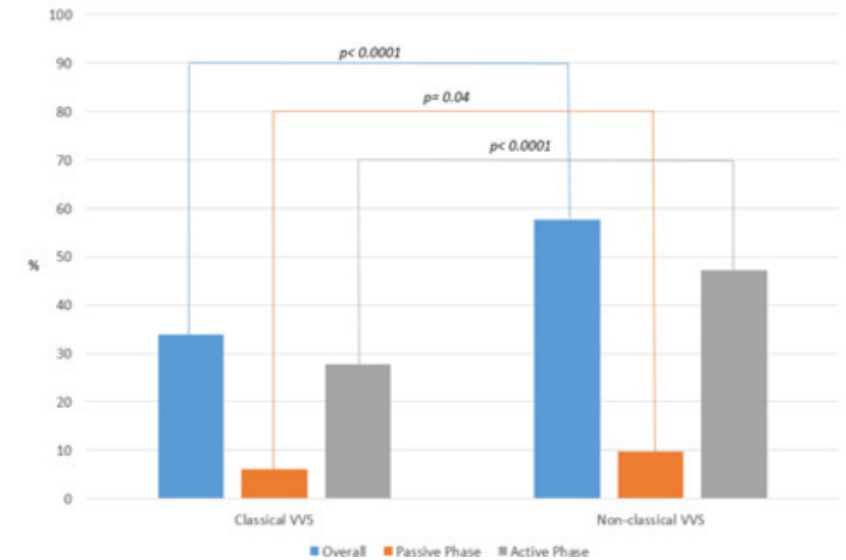


658 patients (51.2%)
with non-classical VVS

HUTT responses divided by phases in overall population



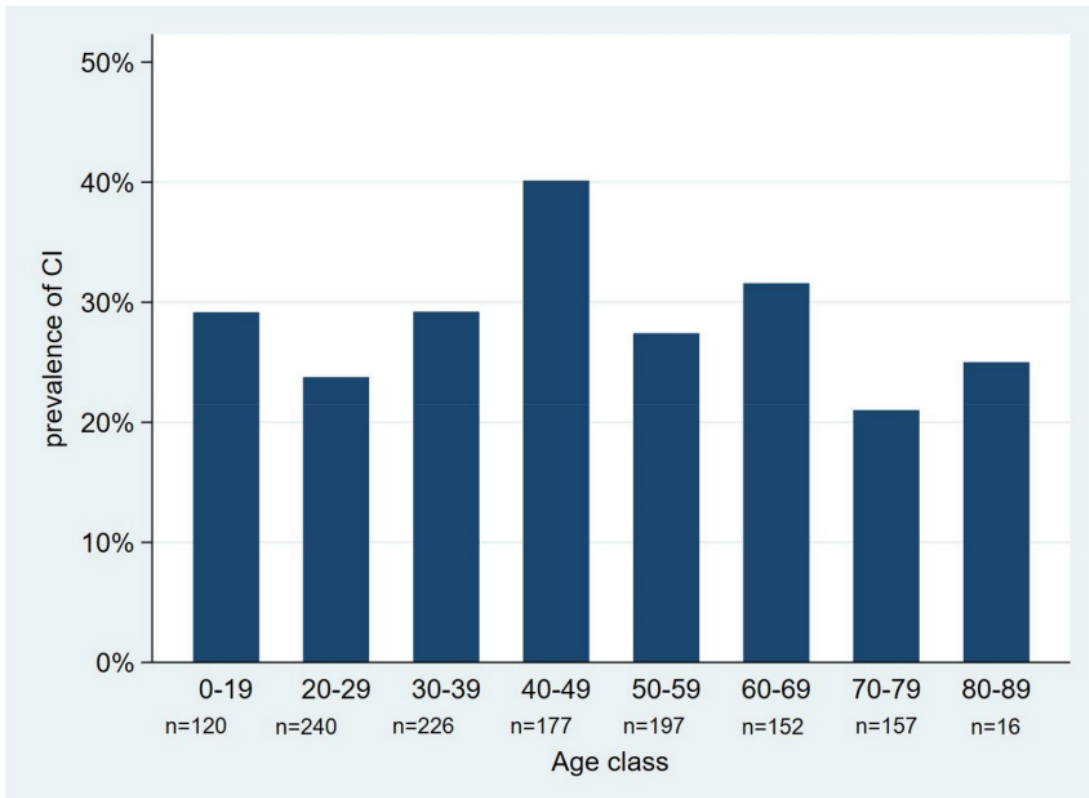
Cardioinhibitory responses in patients with HUTT positivity





Cardioinhibitory syncope with asystole during nitroglycerin potentiated head up tilt test: prevalence and clinical predictors

Vincenzo Russo¹ · Erika Parente¹ · Anna Rago¹ · Angelo Comune¹ · Nunzia Laezza¹ · Andrea Antonio Papa¹ · Celeste Chamberland² · Thao Huynh³ · Paolo Golino¹ · Michele Brignole⁴ · Gerardo Nigro¹



WHAT'S NEW?

- Cardioinhibitory response with asystole to NTG-potentiated HUTT is more frequent than previously reported
- Male gender, smoking habit, history of traumatic syncope, and use of diuretics were independently predictors of HUTT-induced cardioinhibitory syncope
- Situational syncope reduced the probability of cardioinhibitory response to HUTT.



ESC

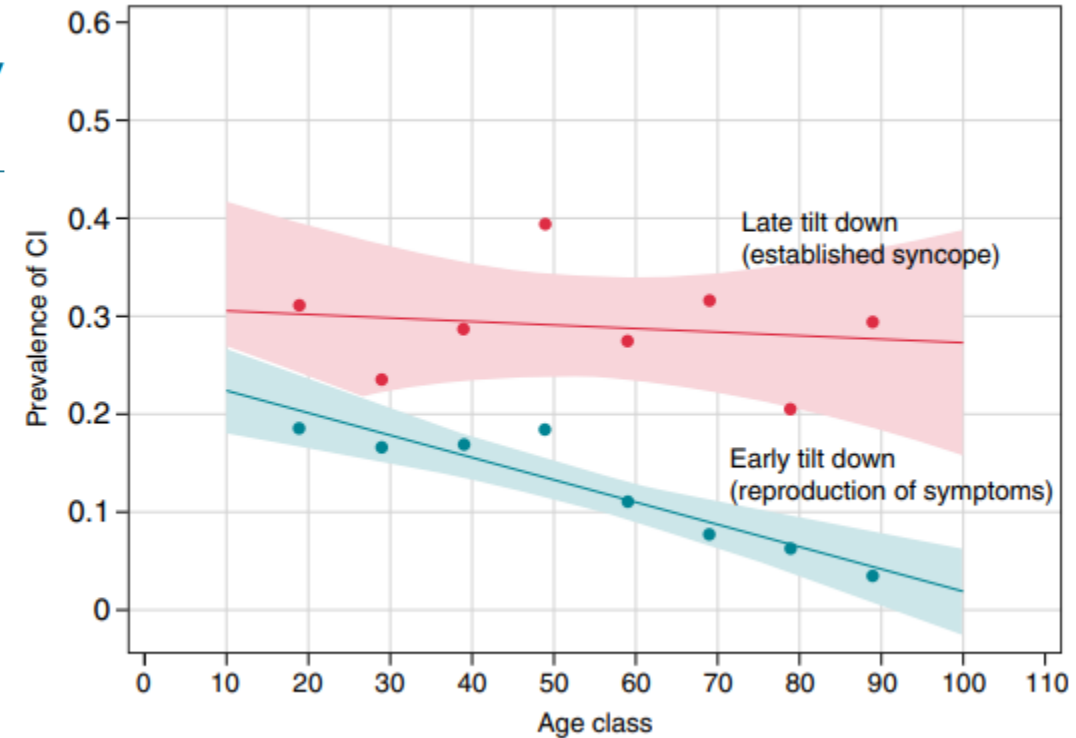
European Society
of Cardiology

Europace (2022) 00, 1–7
<https://doi.org/10.1093/europace/euac154>

REVIEW

Prevalence of asystole during tilt test-induced vasovagal syncope may depend on test methodology

Vincenzo Russo ¹, Erika Parente¹, Antonella Groppelli², Giulia Rivasi³, Marco Tomaino⁴, Alessio Gargaro ⁵, Daniele Giacomelli ⁵, Andrea Ungar ³, Gianfranco Parati ², Artur Fedorowski^{6,7}, Richard Sutton ⁸, J. Gert van Dijk⁹, and Michele Brignole ^{2*}



SYNCOPE



PROTOCOLLO ITALIANO

‘The Italian Protocol’: a simplified head-up tilt testing potentiated with oral nitroglycerin to assess patients with unexplained syncope

A. Bartoletti¹, P. Alboni², F. Ammirati³, M. Brignole⁴, A. Del Rosso⁵,
G. Foglia Manzillo⁶, C. Menozzi⁷, A. Raviele⁸ and R. Sutton⁹

Summary

Methodology of the nitroglycerin-head-up tilt according to ‘The Italian Protocol’:

Stabilization phase: 5 min in the supine position

Passive phase: 20 min of passive tilt at 60°

Provocation phase: further 15 min after sublingual spray of nitroglycerin 400 µg at 60°

Test interruption: (1) Completion of the protocol in the absence of symptoms
(2) Syncope
(3) Progressive (>5 min) symptomatic orthostatic hypotension.



Durata totale: 40 minuti

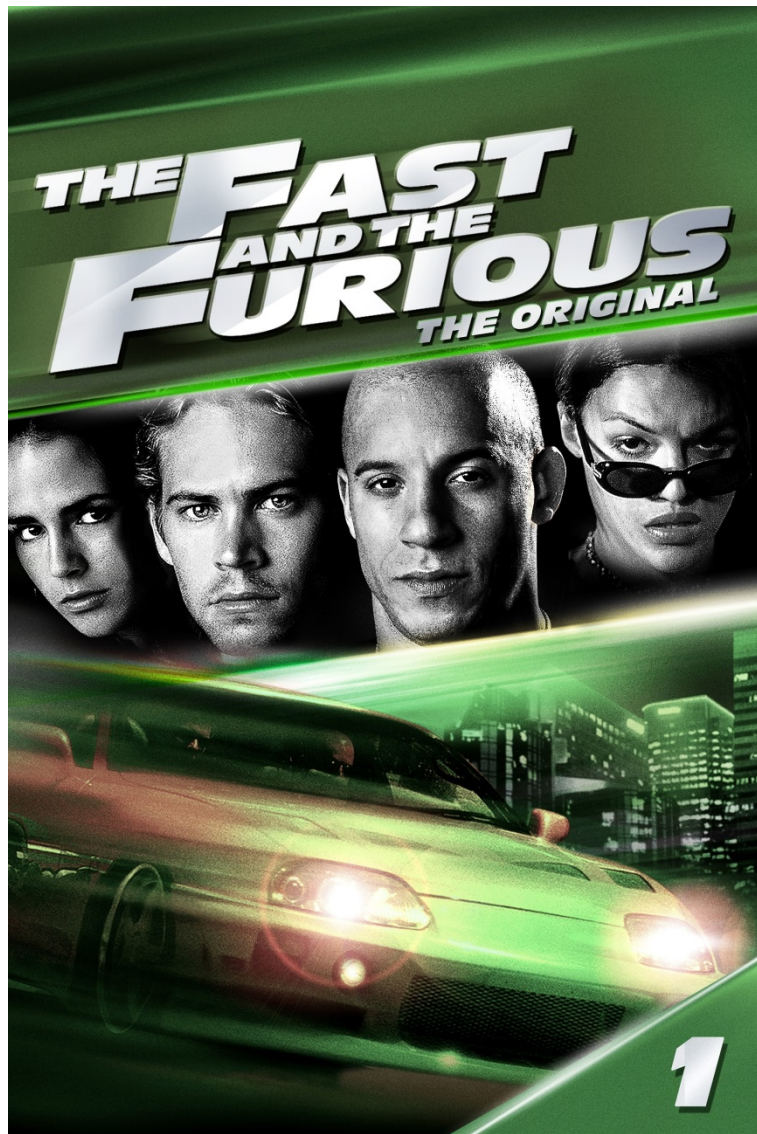


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Protocollo Italiano Fast



5' fase di stabilizzazione in clinostatismo

10' fase ortostatica passiva

400microg Nitroglicerina spray

10' fase ortostatica potenziata

Durata totale: 25 minuti



Contents lists available at ScienceDirect

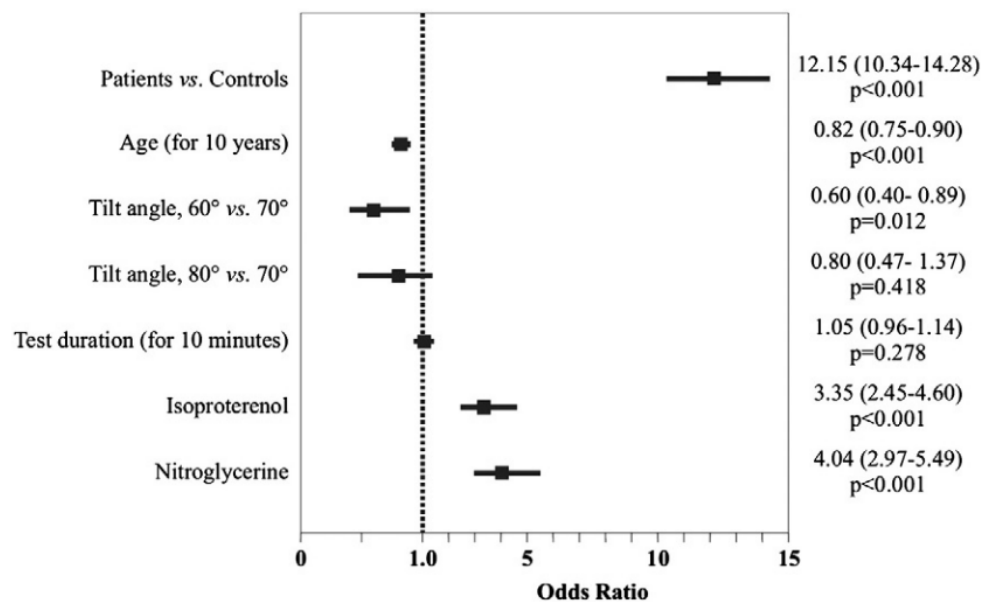
International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Head-up tilt testing for diagnosing vasovagal syncope: A meta-analysis

Cinzia Forleo ^{*,1}, Pietro Guida ¹, Massimo Iacoviello, Manuela Resta, Francesco Monitillo, Sandro Sorrentino, Stefano Favale

Cardiology Unit, Emergency and Organ Transplantation Department, University of Bari, Bari, Italy



Odds ratios at multivariate analysis and 95% confidence intervals for positive outcomes to head-up tilt testing.

JOURNAL ARTICLE

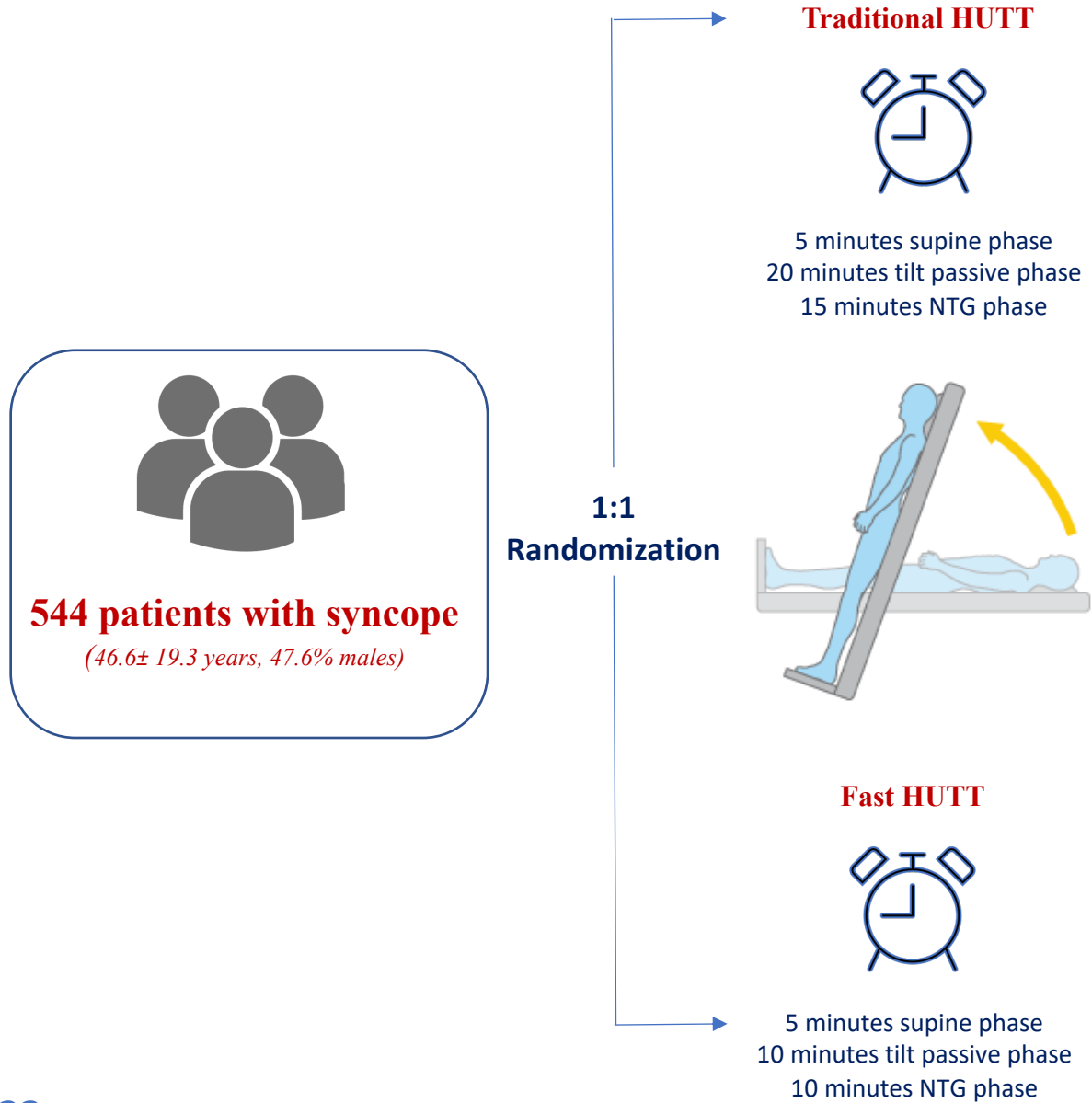
Head-up tilt testing potentiated with oral nitroglycerin; a randomized trial of the contribution of a drug-free phase and a nitroglycerin phase in the diagnosis of neurally mediated syncope ^{FREE}

A. Bartoletti , G. Gaggioli, C. Menozzi, N. Bottoni, A. Del Rosso, R. Mureddu, G. Musso, G. Foglia-Manzillo, B. Bonfigli, M. Brignole

EP Europace, Volume 1, Issue 3, July 1999, Pages 183–186,

<https://doi.org/10.1053/eupc.1999.0036>

Conclusions: The contribution of NTG to the diagnosis is independent of the presence of an unmedicated phase. The appropriate duration of the NTG phase is 10 min. aHUT has good specificity, but a positivity rate lower than cHUT; thus a drug-free phase is necessary to increase the sensitivity of the test.



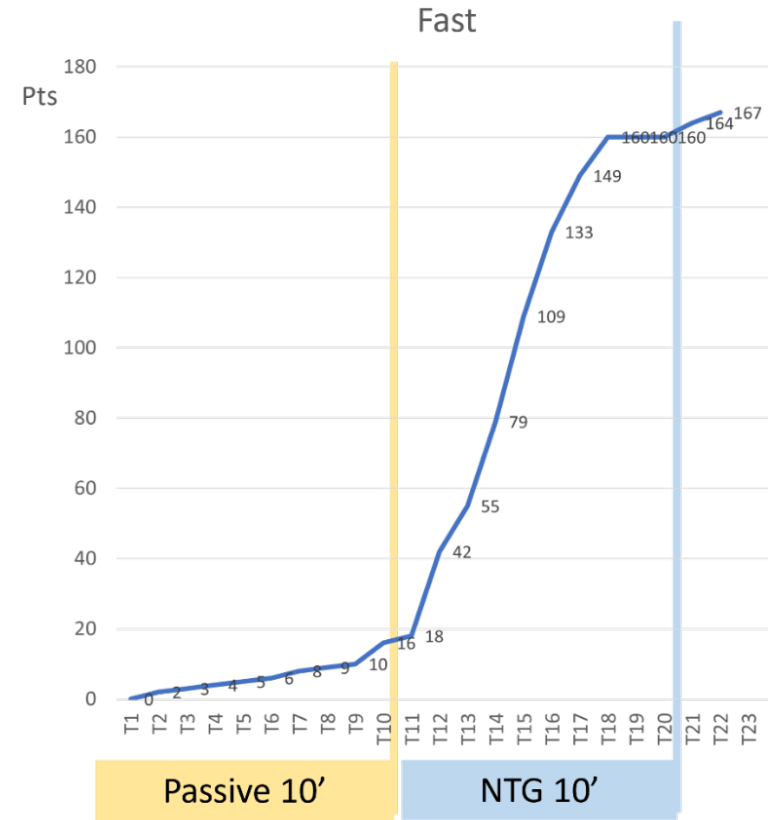
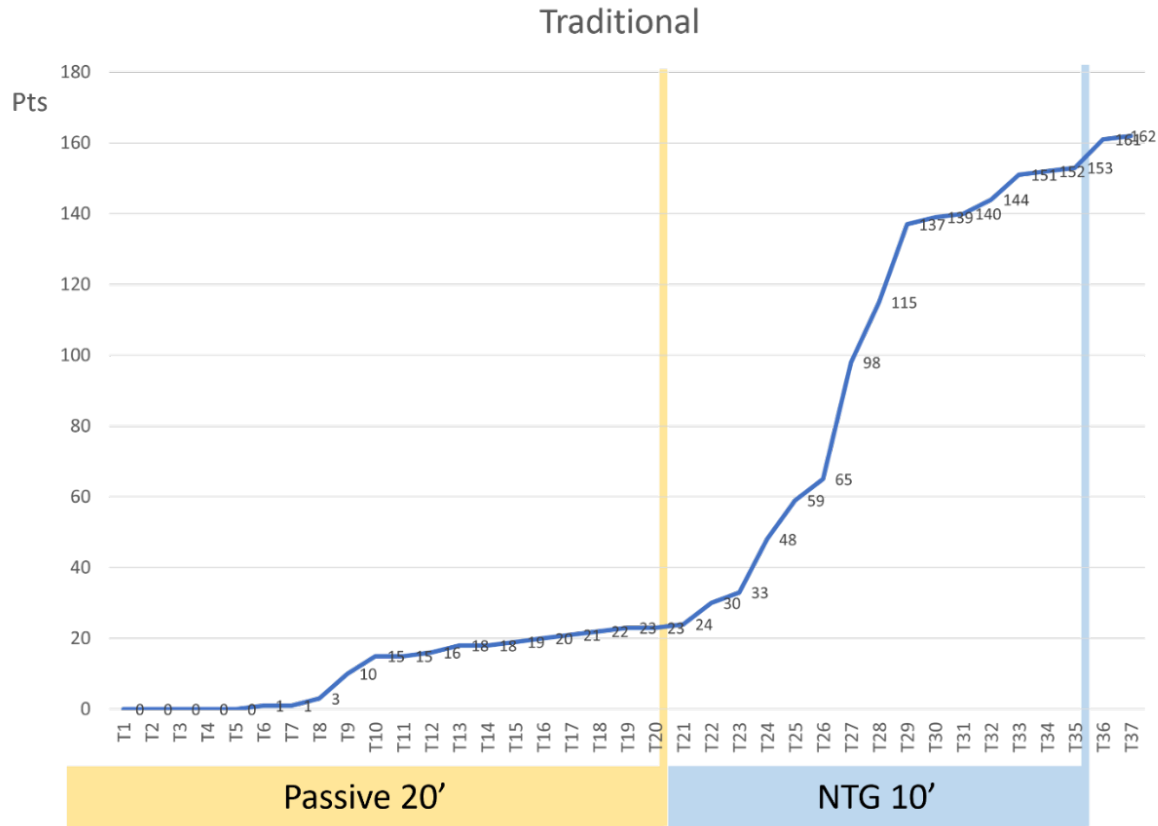


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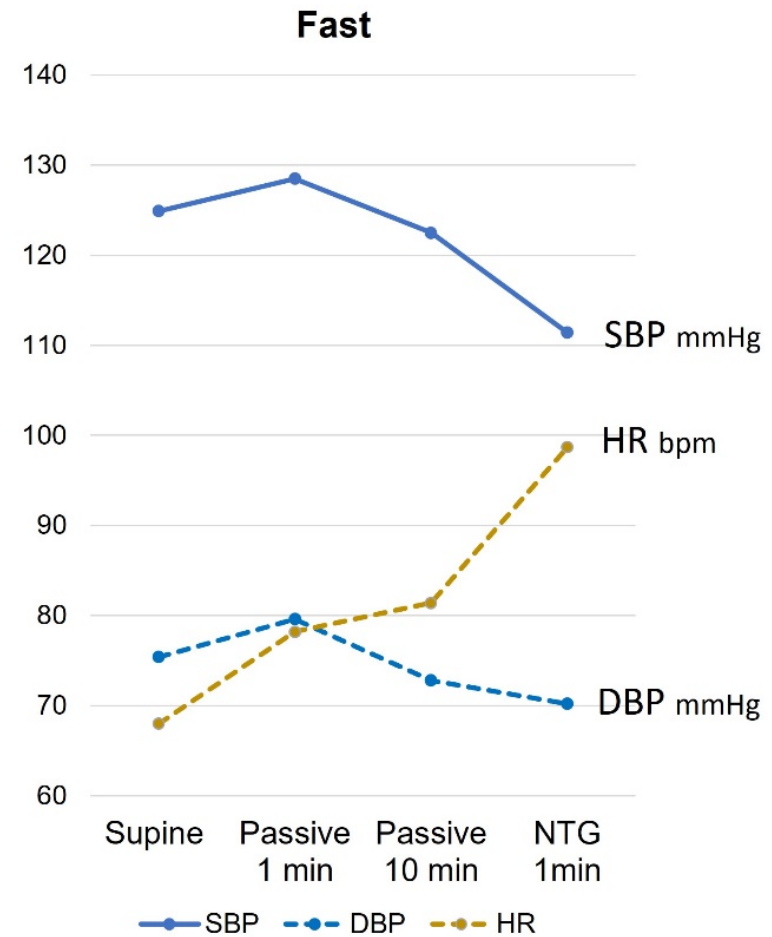
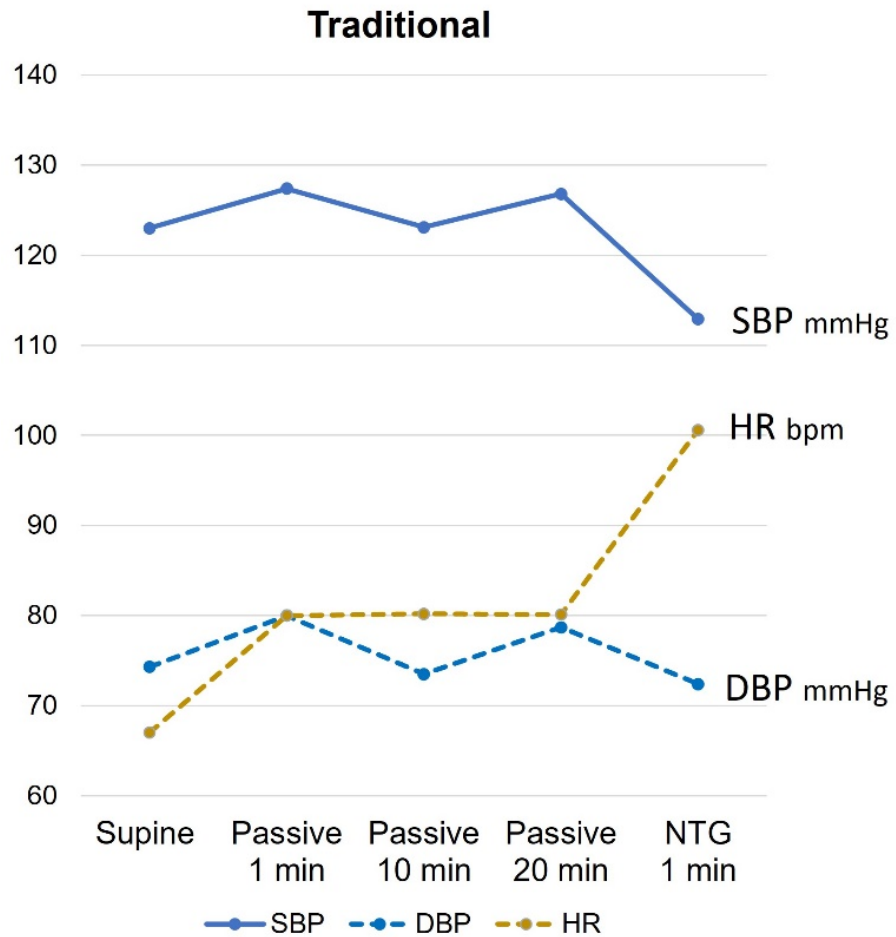
	Overall Population	Fast HUTT	Traditional HUTT
	n. 554	n: 277	n: 277
Age (years)	46.6 ± 19.3	47.2 ± 20.7	46 ± 18
Male gender, n (%)	264 (47.6)	135 (48.7)	129 (46.6)
Smoke, n (%)	141 (25.4)	74 (26.7)	67 (24.2)
Baseline Heart Rate (bpm)	73.5 ± 14.2	73.8 ± 14.5	72.2 ± 13.4
Baseline Systolic BP values (mmHg)	125.5 ± 18.9	128.4 ± 18.6	125.4 ± 18.1
Baseline Diastolic BP values (mmHg)	76.1 ± 12.3	77.3 ± 13.1	76.9 ± 11.6
Hypertension, n (%)	156 (28.1)	84 (30)	72 (26)
Diabetes mellitus, n (%)	34 (6.1)	18 (6.5)	16 (5.8)
Coronary artery disease, n (%)	22 (4)	13 (4.7)	9 (3.2)
Dilated cardiomyopathy, n (%)	16 (2.9)	6 (2.2)	10 (3.6)
Syncope before HUTT, n	4.2 ± 2.8	4.4 ± 3.3	4 ± 2.3
Traumatic syncope, n (%)	148 (26.7)	80 (28.9)	68 (24.5)
Vasovagal prodrome, n(%)	449 (81)	230 (83)	219 (79)
Alfa-blockers, n (%)	37 (6.7)	20 (7.2)	17(6.1)
Calcium channel antagonists, n (%)	28 (5)	15 (5.4)	13 (4.7)
Beta-Blockers, n (%)	46 (8.5)	26 (9.4)	20 (7.2)
ACE-Is /ARBs, n (%)	120 (21.7)	62 (22.4)	58 (20.9)
Diuretics, n (%)	58 (10.5)	25 (9)	33(11.9)
Insulin, n (%)	15 (2.7)	8 (2.9)	11 (4)
Oral antidiabetics, n (%)	24 (4.3)	14 (5)	10 (3.6)

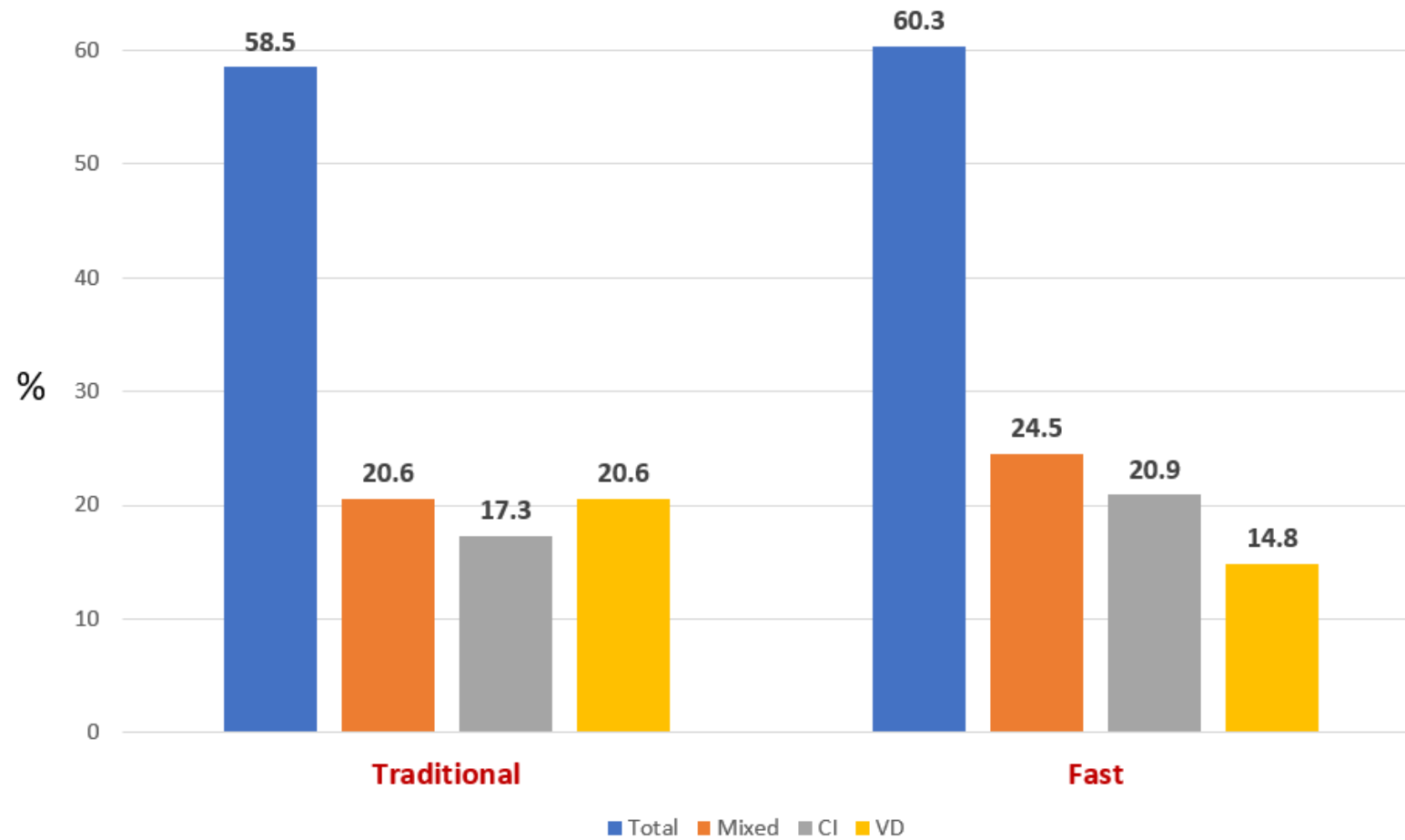


	Fast HUTT		Traditional HUTT		P value
	n. 277		n. 277		
	N (%)	95% CI	N (%)	95% CI	
Overall positivity n (%)	167 (60.3)	54.3 – 66.1	162 (58.5)	52.4 – 64.3	0.73
Passive phase n (%)	16 (5.8)	3.3 – 9.2	26 (9.4)	6.2 – 13.4	0.07
Active phase n (%)	151 (54.5)	48.4 – 60.5	136 (49.1)	43.1 – 55.1	0.23



Cumulative number of patients with positive HUTT response (by one-minute time frame) in Traditional and Fast groups

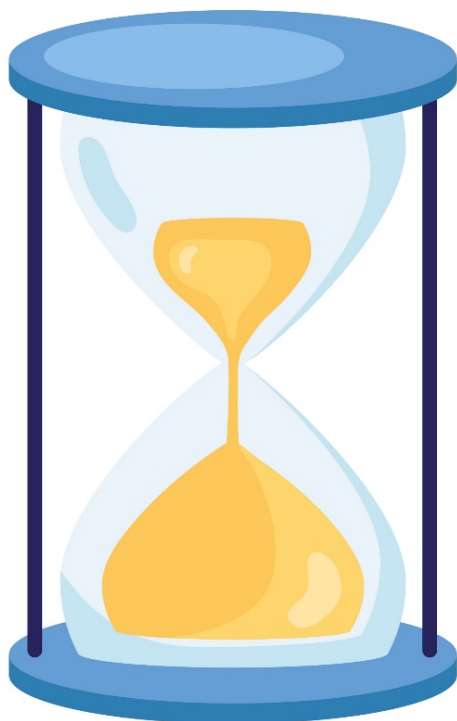




	Fast HUTT		Traditional HUTT		P value
	n. 277		n. 277		
	N (%)	95% CI	N (%)	95% CI	
Mixed form n (%)	68 (24.5)	19.6 – 30.0	57 (20.6)	16.0 – 25.8	0.31
Passive phase n (%)	5 (1.8)	0.6 – 4.2	8 (2.9)	1.2 – 5.6	0.58
Active phase n (%)	63 (22.7)	17.9 – 28.1	49 (17.7)	13.4 – 22.7	0.60
Cardioinhibitory form n (%)	58 (20.9)	16.3 – 26.2	48 (17.3)	13.1 – 22.3	0.33
Passive phase n (%)	5 (1.8)	0.6- 4.2	2 (0.7)	0.1 – 2.6	0.45
Active phase n (%)	53 (19.1)	14.7- 24.3	46 (16.6)	12.4 – 21.5	0.51
Vasodepressor form n (%)	41 (14.8)	10.8 – 19.5	57 (20.6)	16.0 – 25.8	0.09
Passive phase n (%)	4 (1.4)	0.4 – 3.7	16 (5.8)	3.3 – 9.2	0.01
Active phase n (%)	37(13.3)	9.6 – 17.9	41 (14.8)	10.8 – 19.5	0.61



Il valore diagnostico del Protocollo FAST è simile a quello del Protocollo Tradizionale, senza alcuna differenza nella distribuzione della risposta emodinamica all'ortostatismo, nei pazienti con sospetta sincope vasovagale



277 Fast x 15 minuti di risparmio: **4155 minuti risparmiati**

4155 minuti = **69.25 ore risparmiate**

69.25 ore = **2 settimane lavorative**

Il nuovo protocollo Italiano: Tilt FAST





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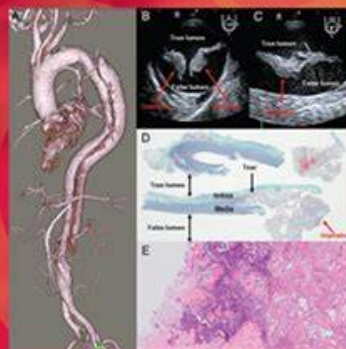
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Infective endocarditis associated with acute dissection underlying bacterial meningitis. See figure legend on page 871.

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Dear Dr Russo,

Thank you for your submission to the European Heart Journal. We are delighted to inform you that your paper entitled "'Fast Italian Protocol': short duration head-up tilt test potentiated with oral nitroglycerin" with reference number EURHEARTJ-D-22-03736R1 has been accepted for publication.

Your contribution has now been forwarded to our Scientific Editor for a thorough review. The Editor will contact you directly (via email) if questions require answering. Very minor issues will be submitted directly to our Production Department for typesetting and a final version of the manuscript sent to you for your records.

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A final decision letter confirming this acceptance will be released once the manuscript is being sent to our typesetters.

Please feel free to contact the Editorial Office (ehj@unicatt.it) at any time with further questions and thank you for submitting to the EHJ.

Best regards,

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Grazie per l'attenzione

... Io scuso tutti coloro ai quali la vista di Napoli fa perdere i sensi...

J.W. Goethe

