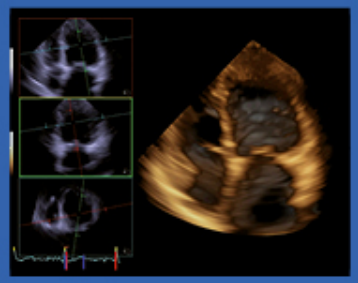


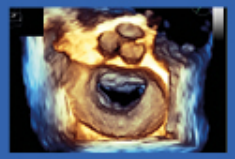
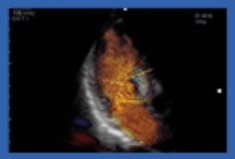
EuroValve
March 27 - 28, 2015

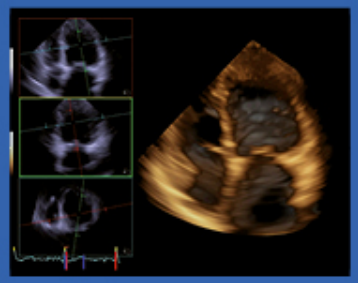
Exercise PHT in valvular heart disease

Julien Magne

CHU Limoges, France





EuroValve
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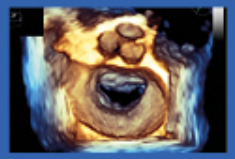
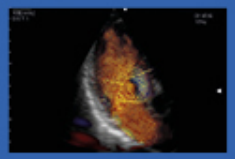
Faculty disclosure

Julien Magne

I disclose the following financial relationships:

I have **no financial relationships** to disclose.



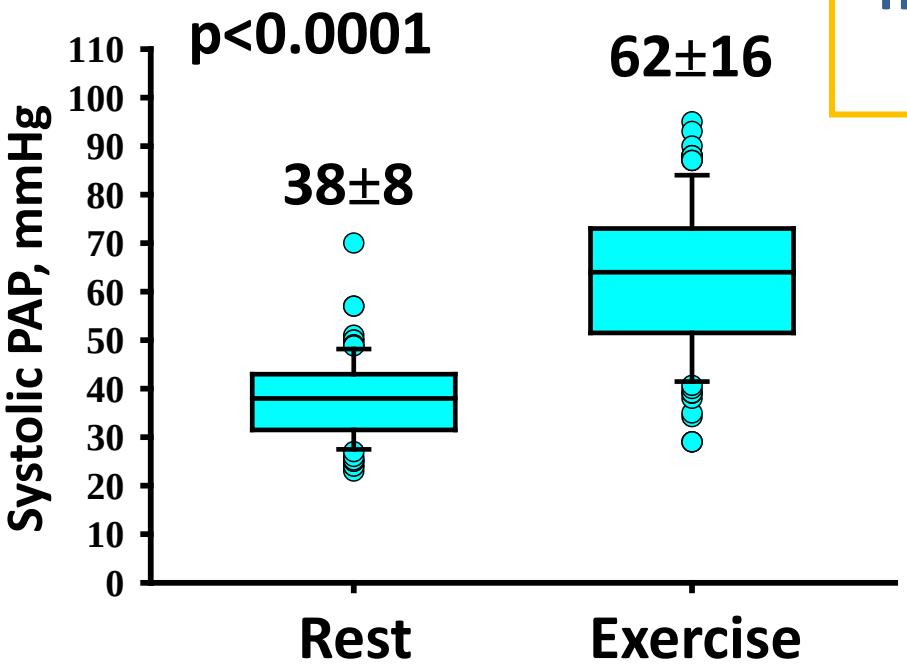
www.eurovalvecongress.com

In which patients Exercise PHT is interesting to assess?

- In Asymptomatic Aortic Stenosis
  - ✓ No recommendation
- In Secondary Mitral Regurgitation
  - ✓ No recommendation
- In Asymptomatic Primary Mitral Regurgitation
  - ✓ Class IIb indication in ESC 2012 Guidelines
- In Asymptomatic Mitral Stenosis
  - ✓ No recommendation

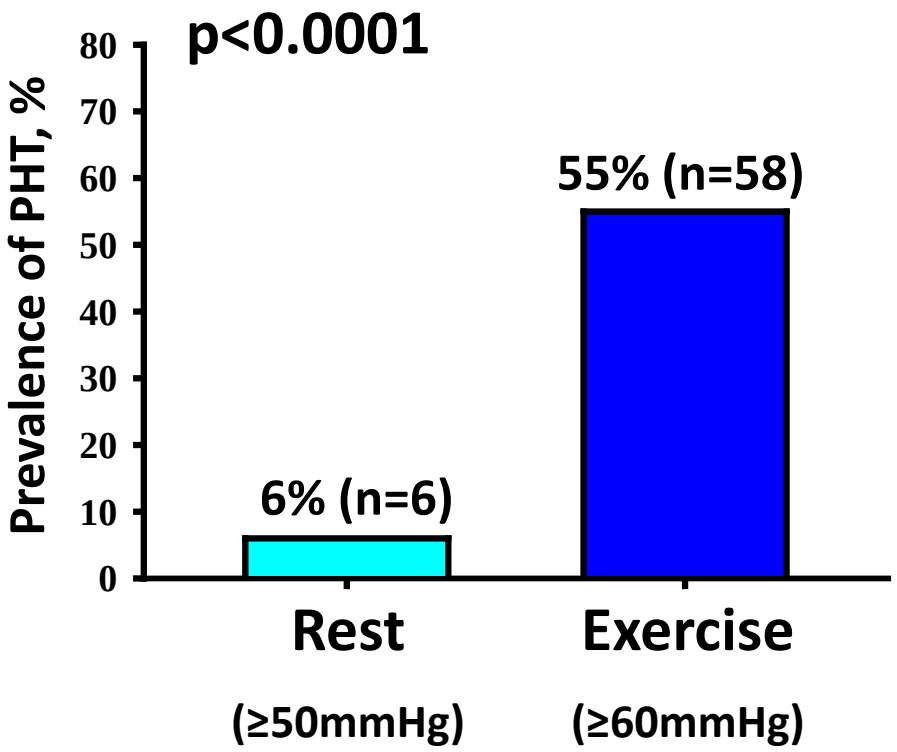
Exercise-induced changes in SPAP

n=105 « true » asymptomatic severe AS with preserved LV function



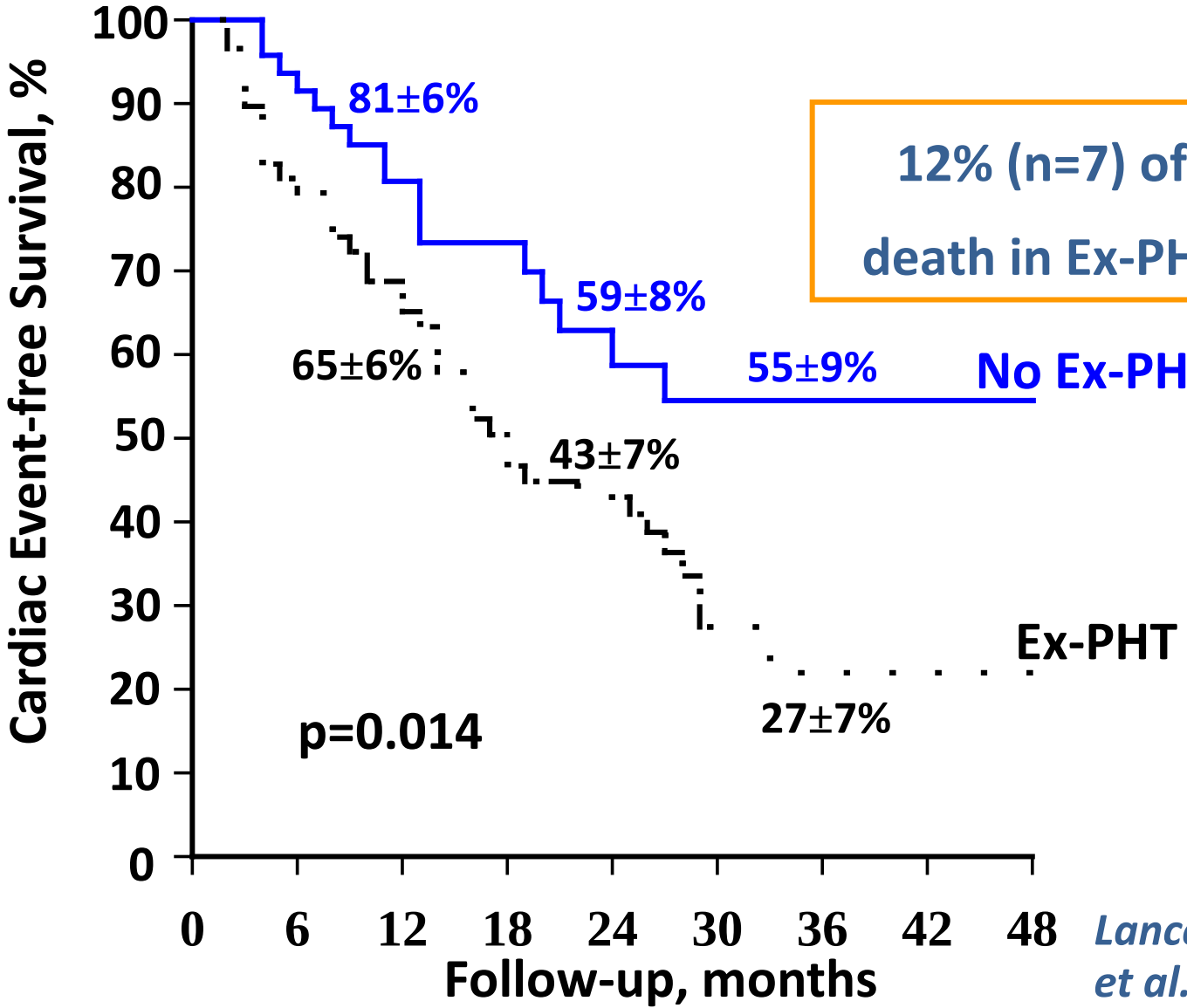
Resting SPAP ≥40mmHg

n=44, 42%



Lancellotti, Magne*, Donal et al. Circulation, 2012*

Cardiac Event-free Survival according to Ex-PHT

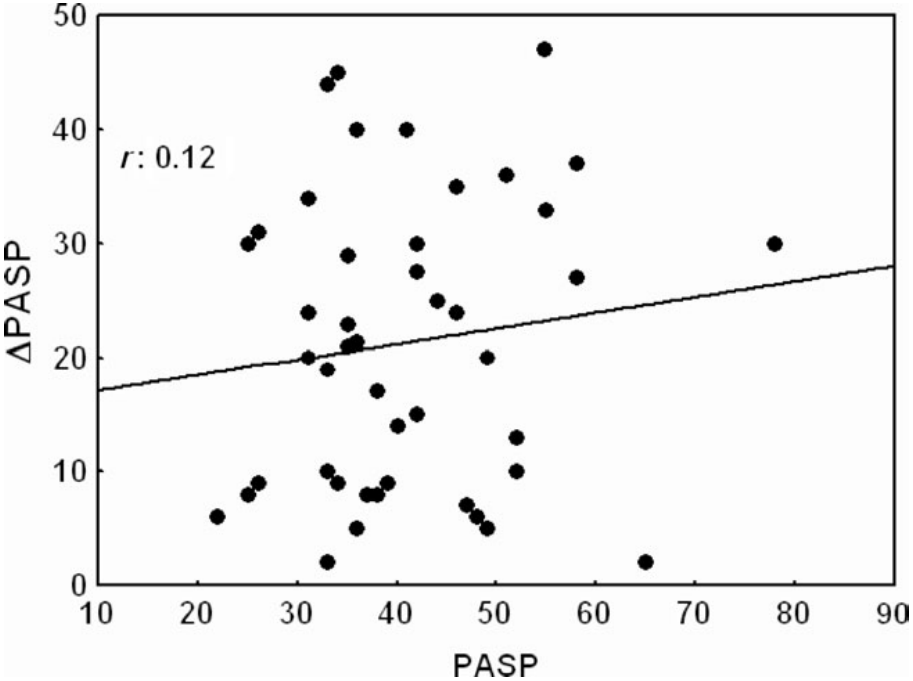


12% (n=7) of cardiovascular death in Ex-PHT group (*vs.* 0%)

Lancellotti, Magne*, Donal et al. Circulation, 2012*

Secondary MR
Dynamic PHT in HF: Relationship with Symptoms

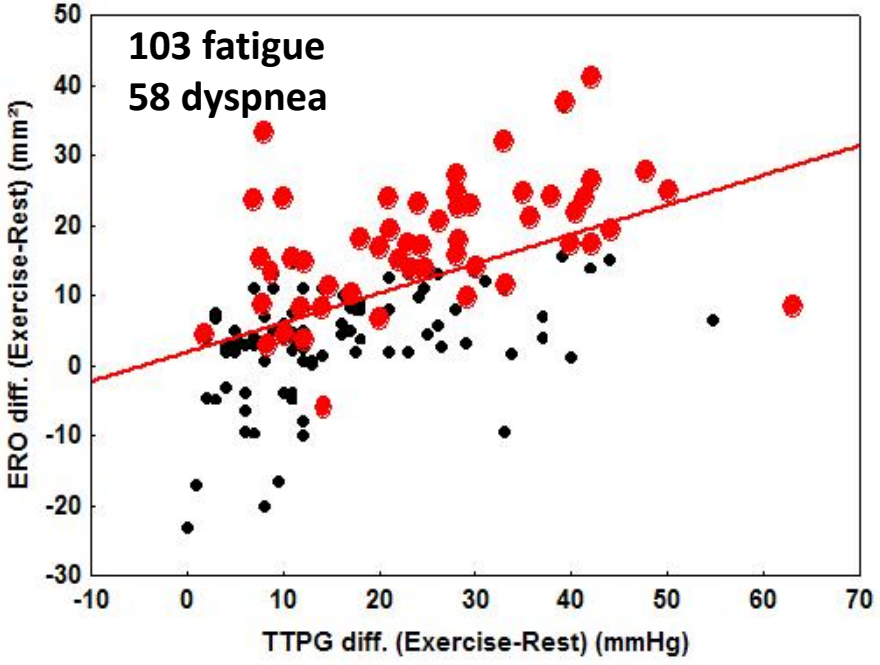
- 46 HF pts with ischemic LV dysdunction
- Determinants of SPAP at exercise



LV EF and mitral ERO were independently associated with PASP at exercise

Tumminello et al, Eur Heart J 2007

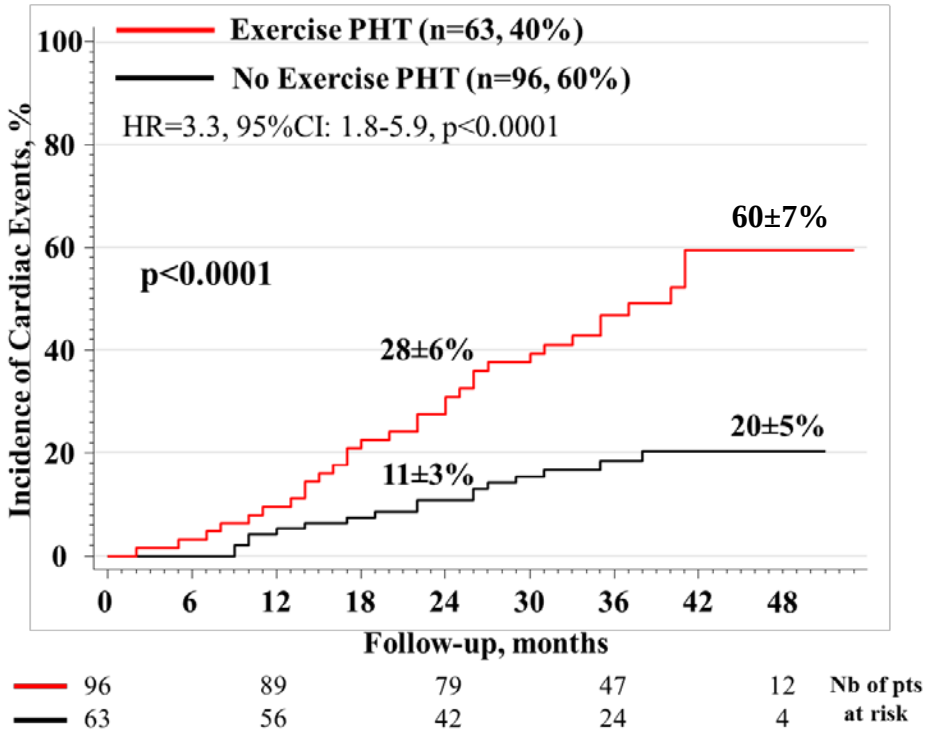
- 161 HF pts with ischemic LV dysdunction
- Determinants of dyspnea on exercise

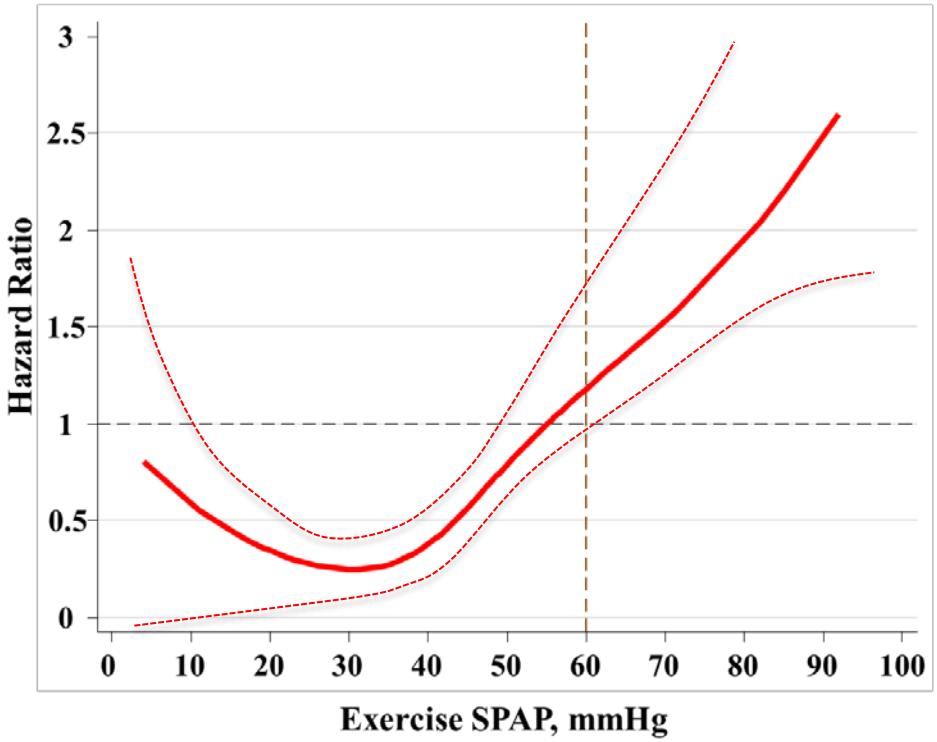


Patients with a SPAP > 60 mmHg interrupted more frequently exercise for dyspnea

Piérard and Lancellotti N Engl J Med 2004

Secondary MR
Dynamic PHT in HF: Relationship with Outcome

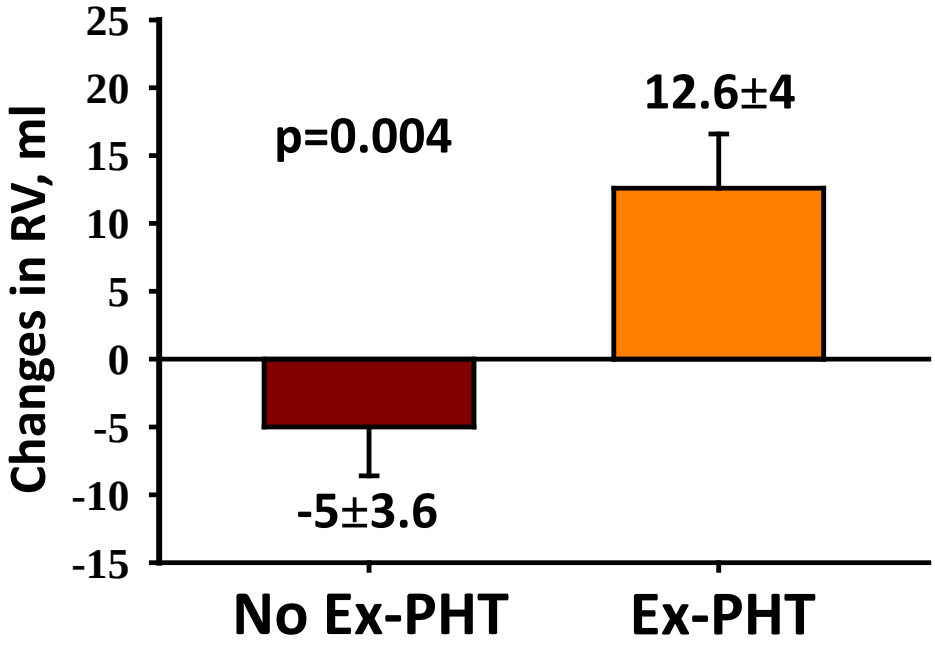




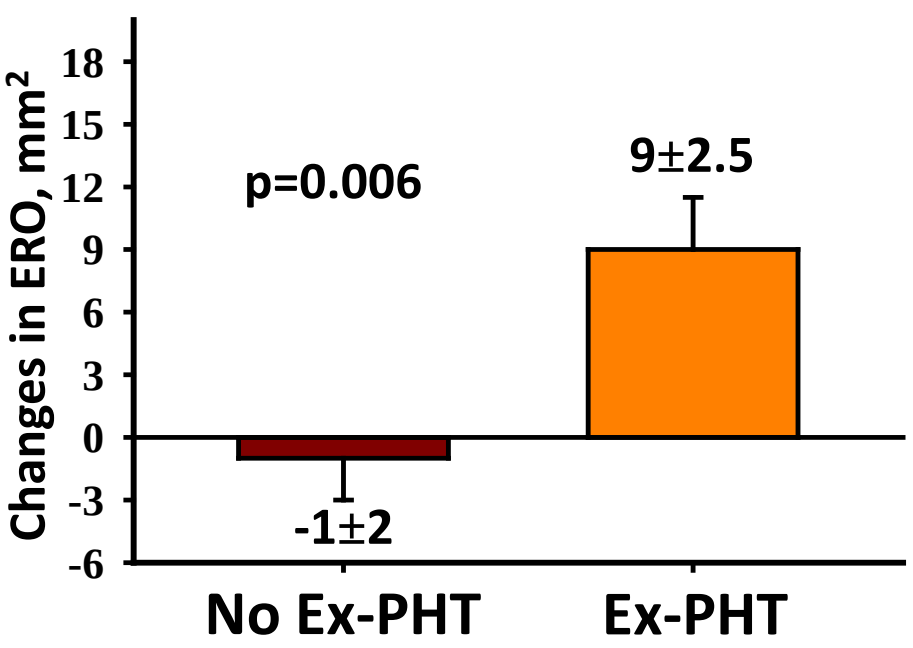
Lancellotti, Magne* et al, AJC 2015*

Exercise-induced changes in MR according to Exercise PHT

Regurgitant Volume



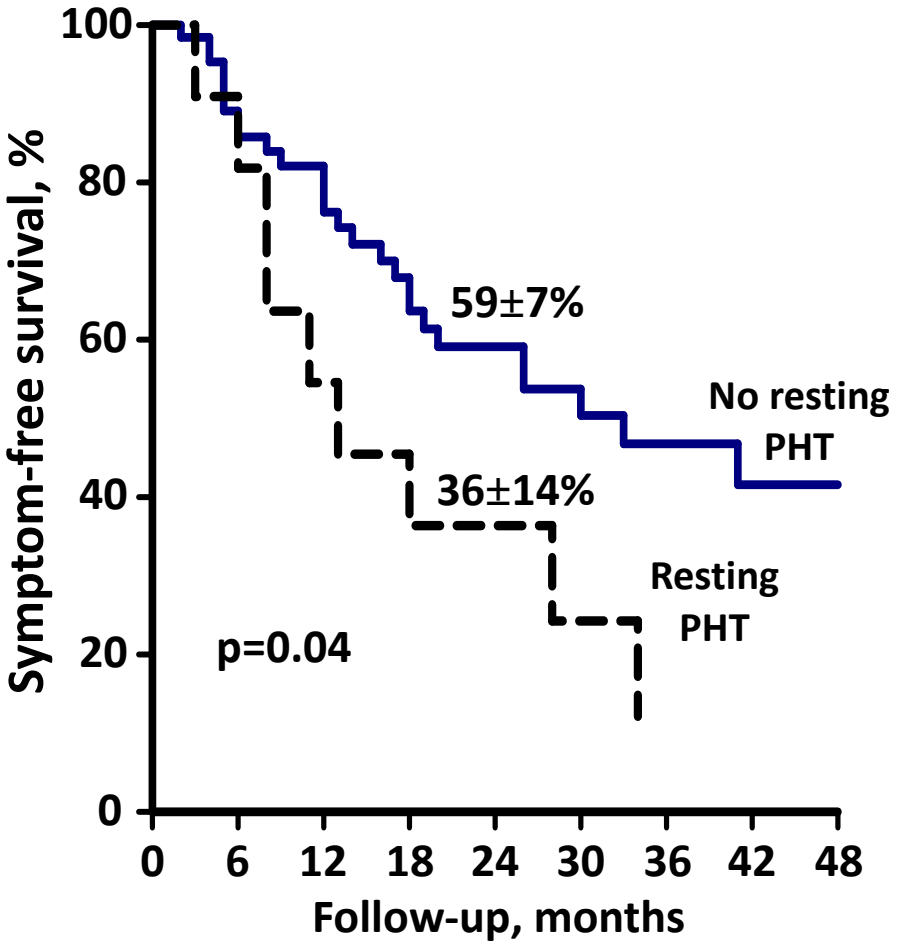
Effective Regurgitant Orifice



Magne J, Lancellotti P, Piérard LA. Circulation, 2010, 122: 33-41

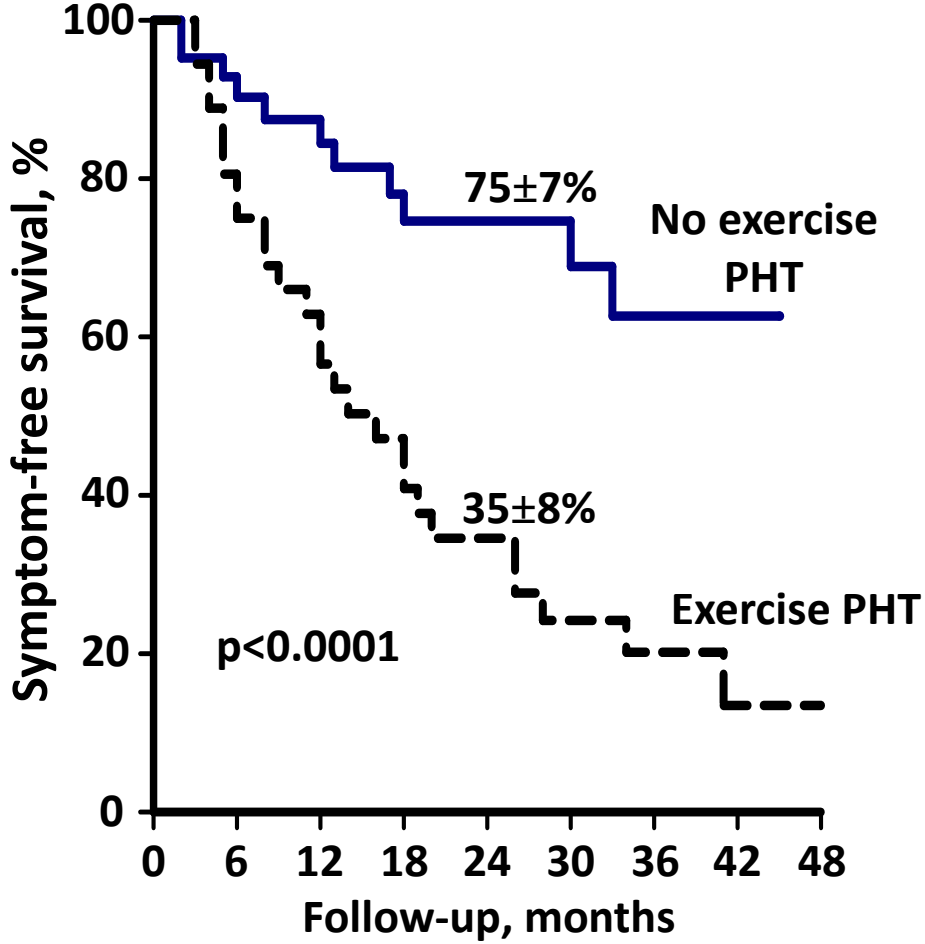
Impact on Symptom-free Survival

Resting PHT (SPAP >50mmHg)



Adjusted HR=2.1, p=NS

Exercise PHT (SPAP >60mmHg)

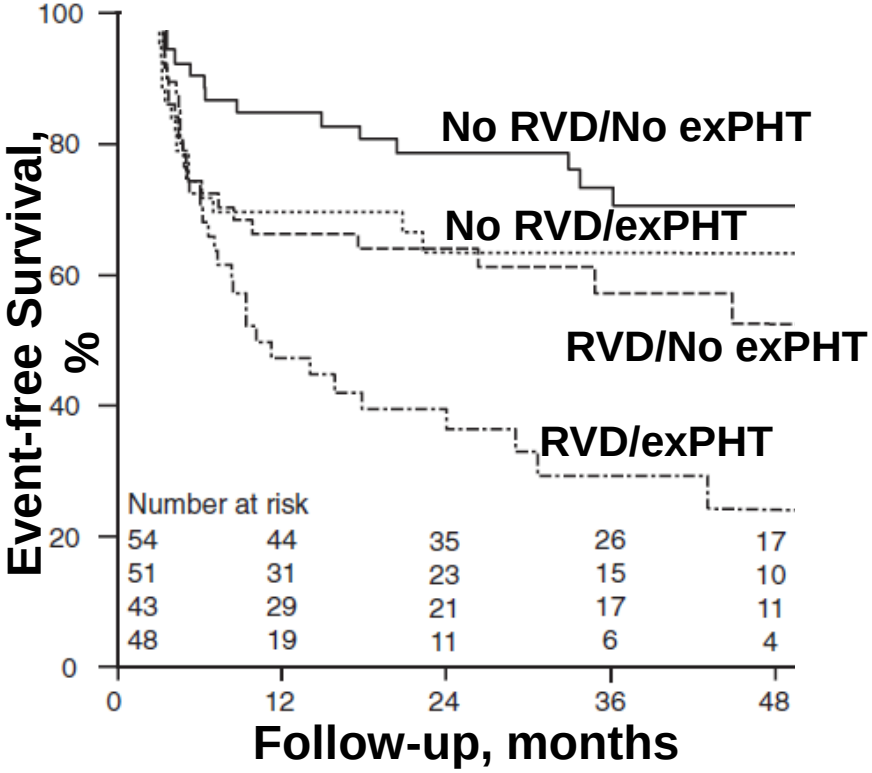


Adjusted HR=2.8, p=0.01

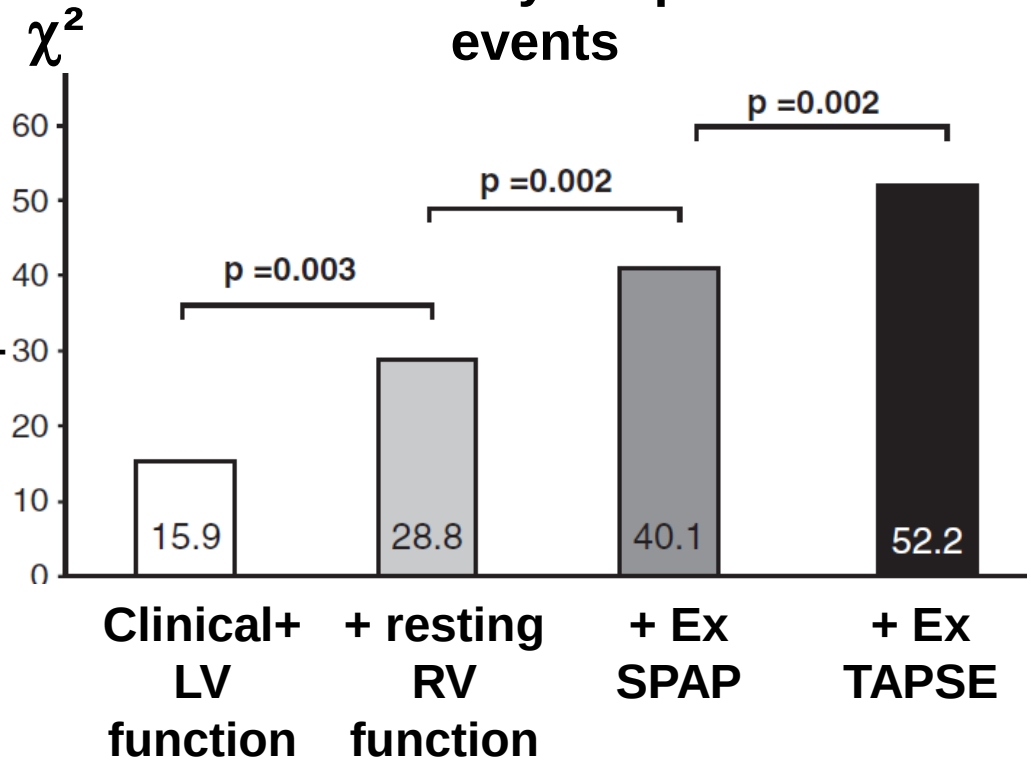
Ex. PHT, RV function and Outcome

n=196 asymptomatic moderate to severe MR, no LV dysfunction/dilatation

Cardiac event-free survival



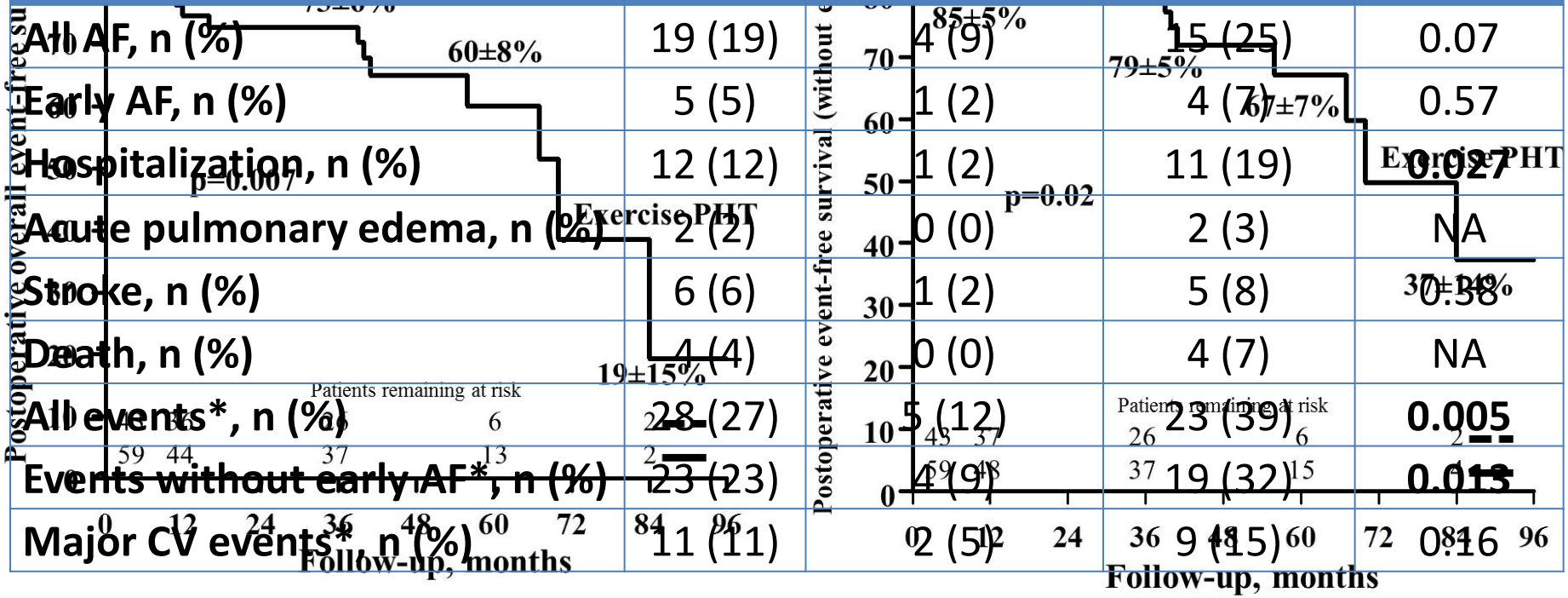
Multivariate Analysis: prediction of events



Kusunose et aL., Circ CV Imaging, 2013

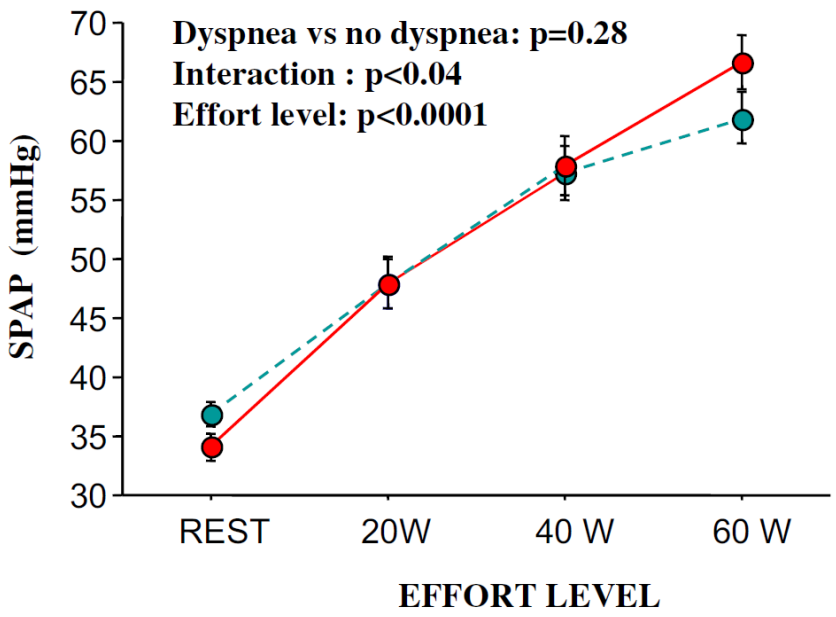
Impact of preop Ex. PHT on Postop Outcome

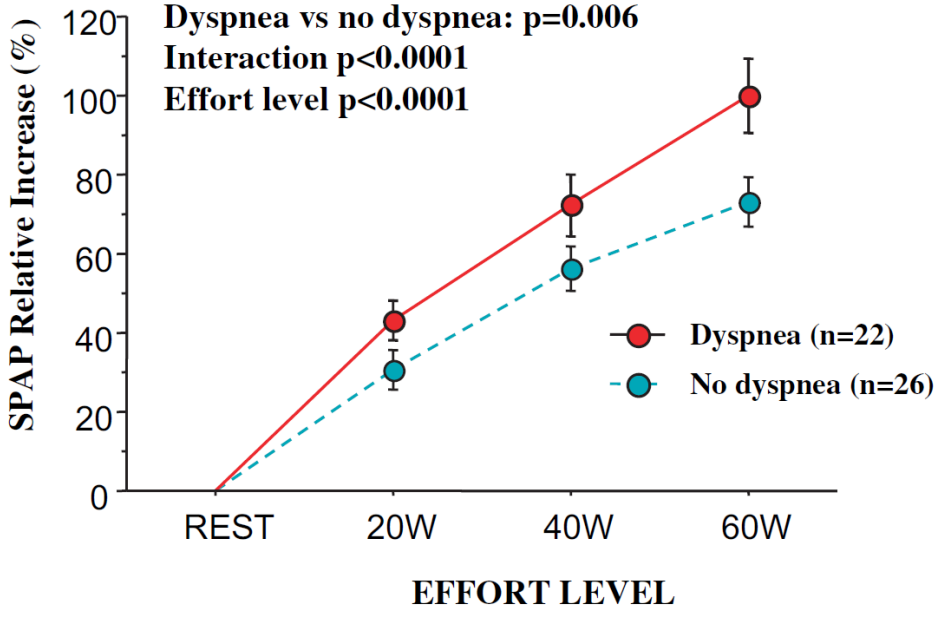
Event	Whole cohort n=102	No Ex. PHT (n=43, 42%)	Ex. PHT (n=59, 58%)	P
All AF, n (%)	19 (19)	4 (9)	15 (25)	0.07
Early AF, n (%)	5 (5)	1 (2)	4 (7)	0.57
Hospitalization, n (%)	12 (12)	1 (2)	11 (19)	**0.027**
Acute pulmonary edema, n (%)	2 (2)	0 (0)	2 (3)	NA
Stroke, n (%)	6 (6)	1 (2)	5 (8)	0.38
Death, n (%)	4 (4)	0 (0)	4 (7)	NA
All events*, n (%)	28 (27)	5 (12)	23 (39)	**0.005**
Events without early AF*, n (%)	23 (23)	4 (9)	19 (32)	**0.013**
Major CV events*, n (%)	11 (11)	2 (5)	9 (15)	0.16



Magne, Donal et al., Heart, 2014

Exercise Stress Echo in Mitral Stenosis



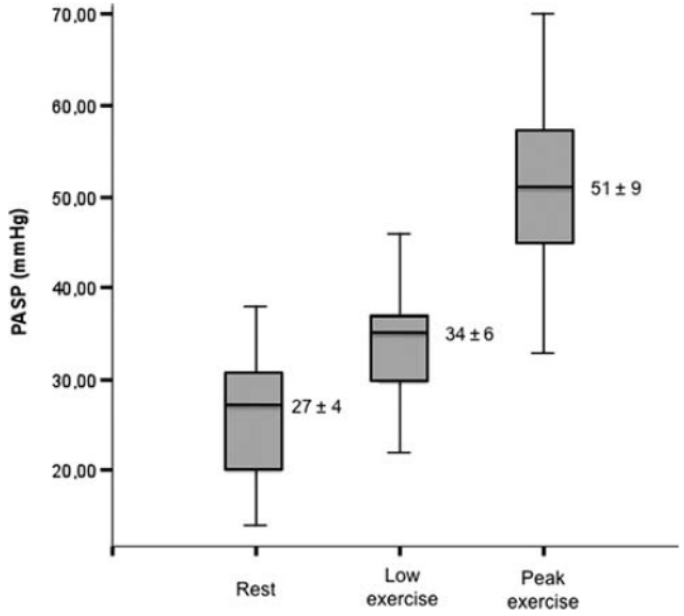


1) Asymptomatic patients with moderate to severe MS: 46% of dyspnea during ex.
2) Peak SPAP >60 mmHg (75%) was not significantly associated with occurrence of dyspnea.
3) Main determinant of symptoms: 90% of ΔSPAP at 60W

Brochet et al., JASE, 2011

Ex-induced Changes in sPAP in Controls

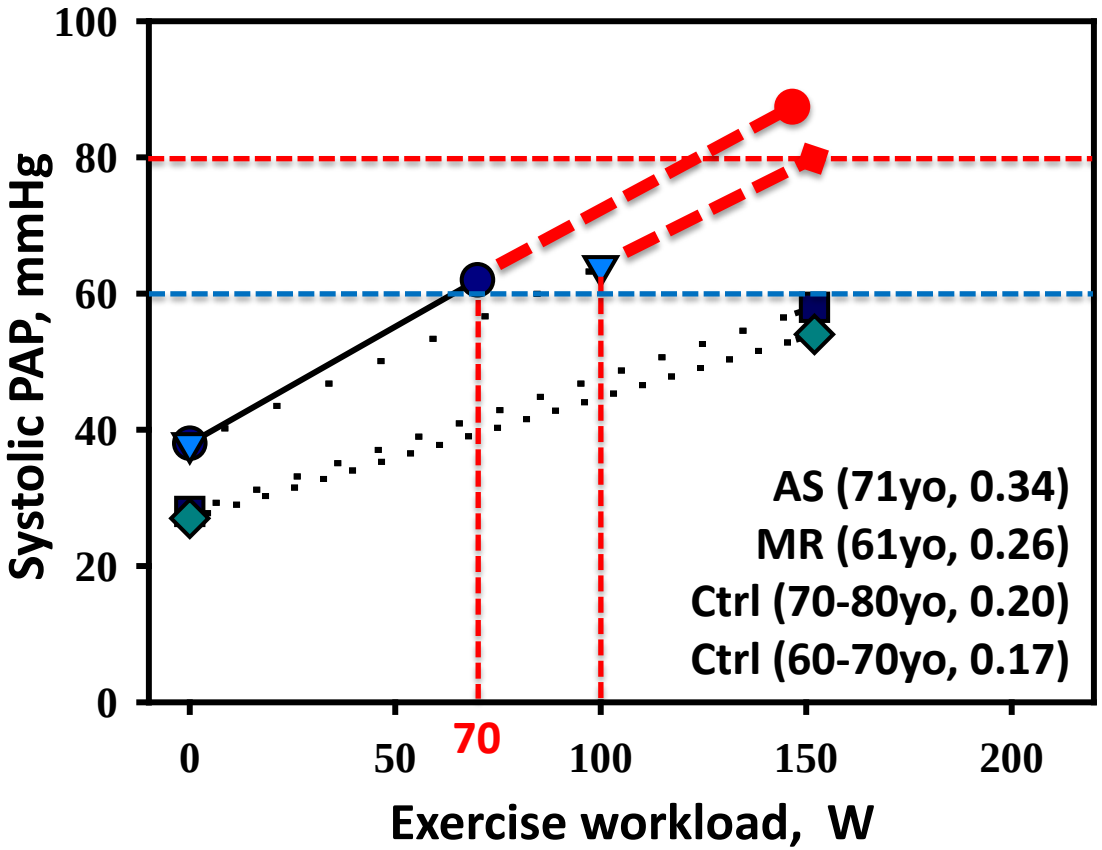
	All ($n = 70$)	Age 20–30 ($n = 13$)	Age 30–40 ($n = 10$)	Age 40–50 ($n = 14$)	Age 50–60 ($n = 12$)	Age 60–70 ($n = 11$)	Age 70–80 ($n = 10$)
PASP at rest (mmHg)	27 ± 4	27 ± 4	29 ± 3	28 ± 3	26 ± 4	27 ± 4	28 ± 6
PASP at first workload step (mmHg)	34 ± 6	31 ± 4	33 ± 5	34 ± 4	31 ± 6	37 ± 9	37 ± 5
PASP at peak exercise (mmHg)	51 ± 9	45 ± 7	51 ± 6	52 ± 9	53 ± 4	54 ± 12*	58 ± 7*
Increase in PASP (mmHg)	27 ± 8	22 ± 8	24 ± 7	27 ± 10	29 ± 5	29 ± 9	30 ± 8



- **Maximal workload: 152±47W (range: 75-250)**
- **Ex PHT: 36% of 60-70yo**
  50% of >70yo
- **Maximal workload in Ex PHT: 142±51W**

Mahjoub et al. EJE, 2009

Ex-induced Changes in sPAP in Controls

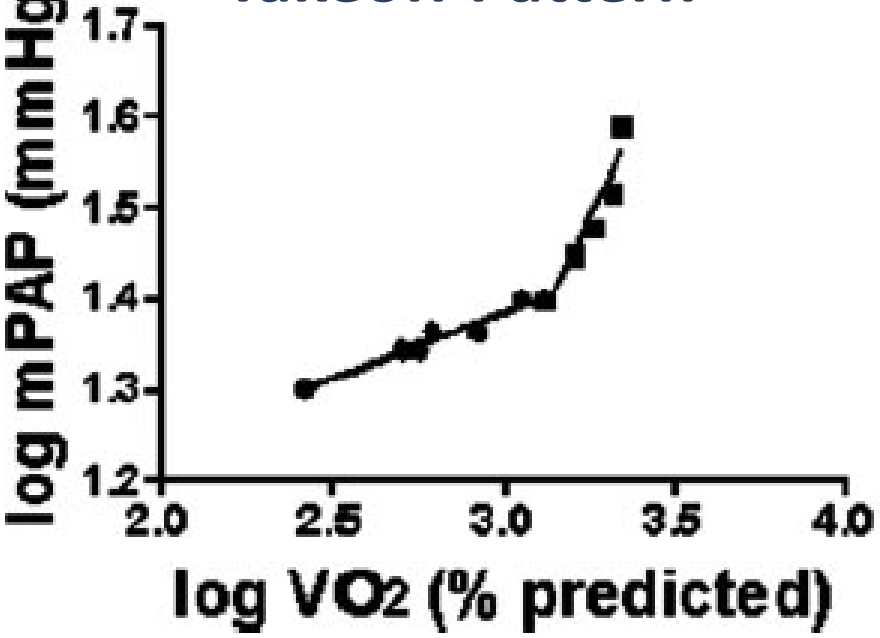


- Different maximal reached workload;
- Different changes in sPAP slope;
- Different kinetics;
- Different physiological mechanisms

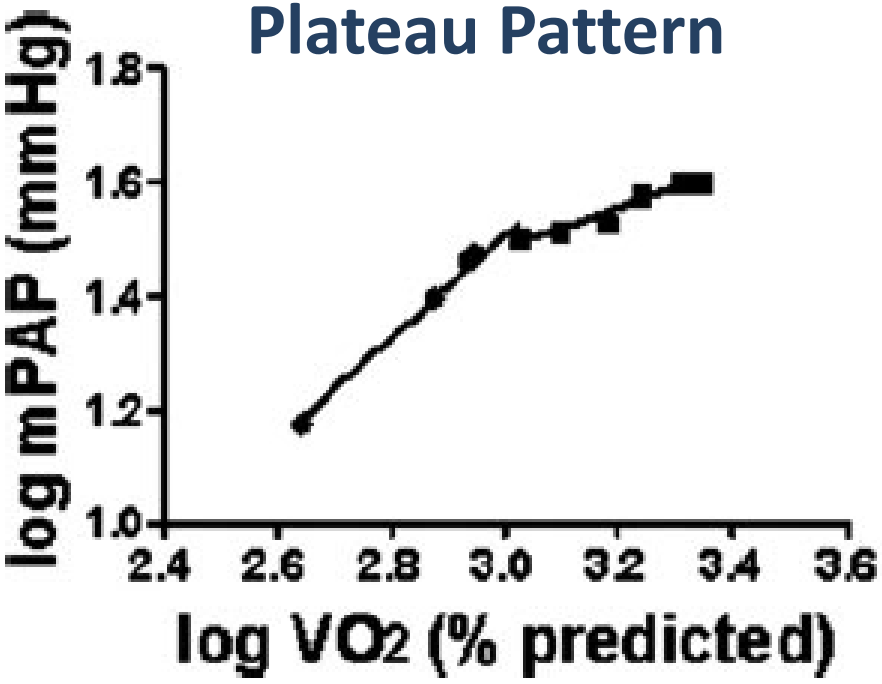
Patterns of Increase in PAP

406 pts referred for CPET and with radial and pulmonary arterial catheter in place and radionuclide ventriculography scanning

Takeoff Pattern

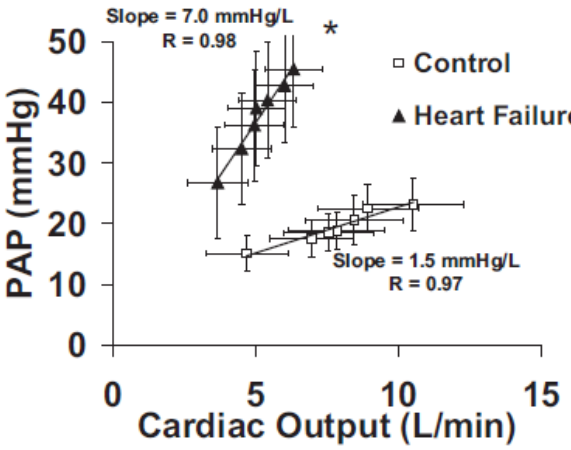


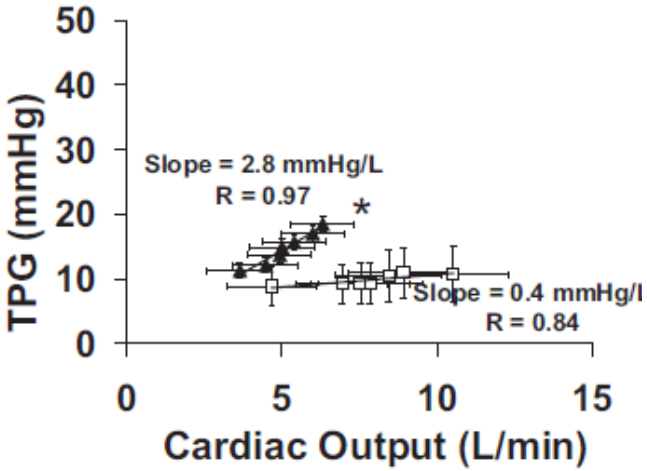
Plateau Pattern

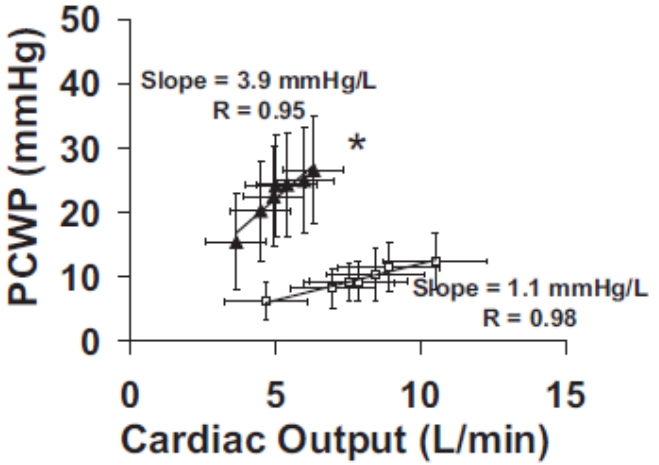


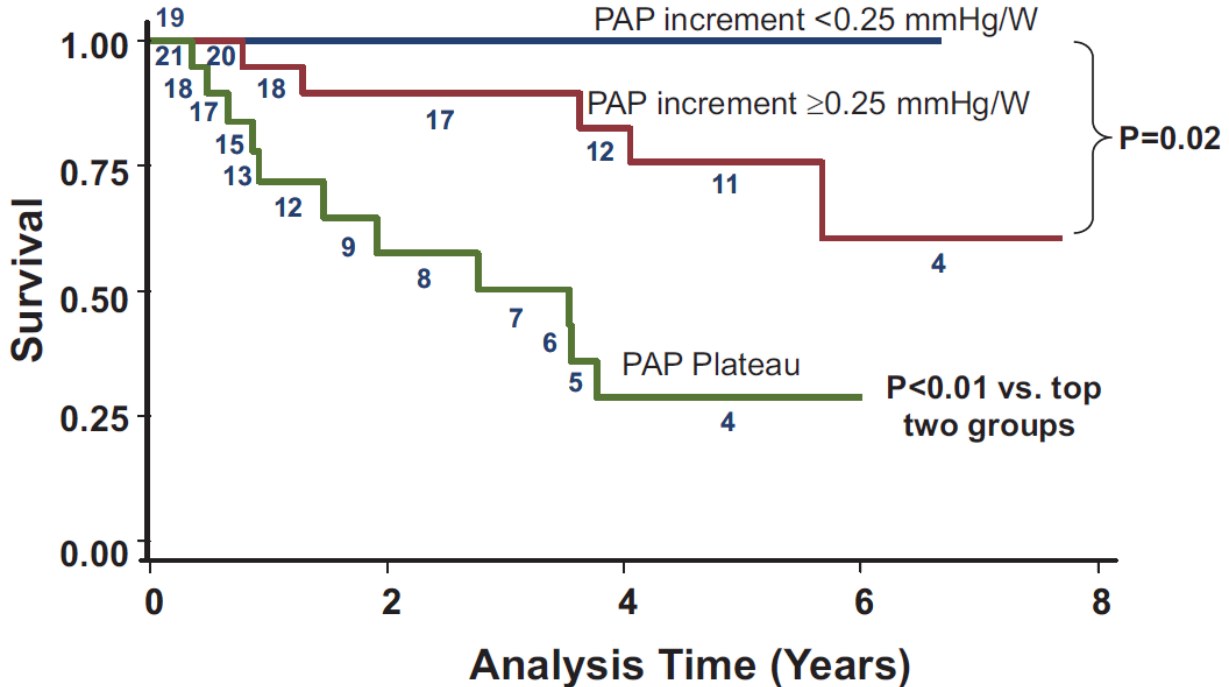
Tolle et al. Circulation 2008

Patterns of Increase in PAP



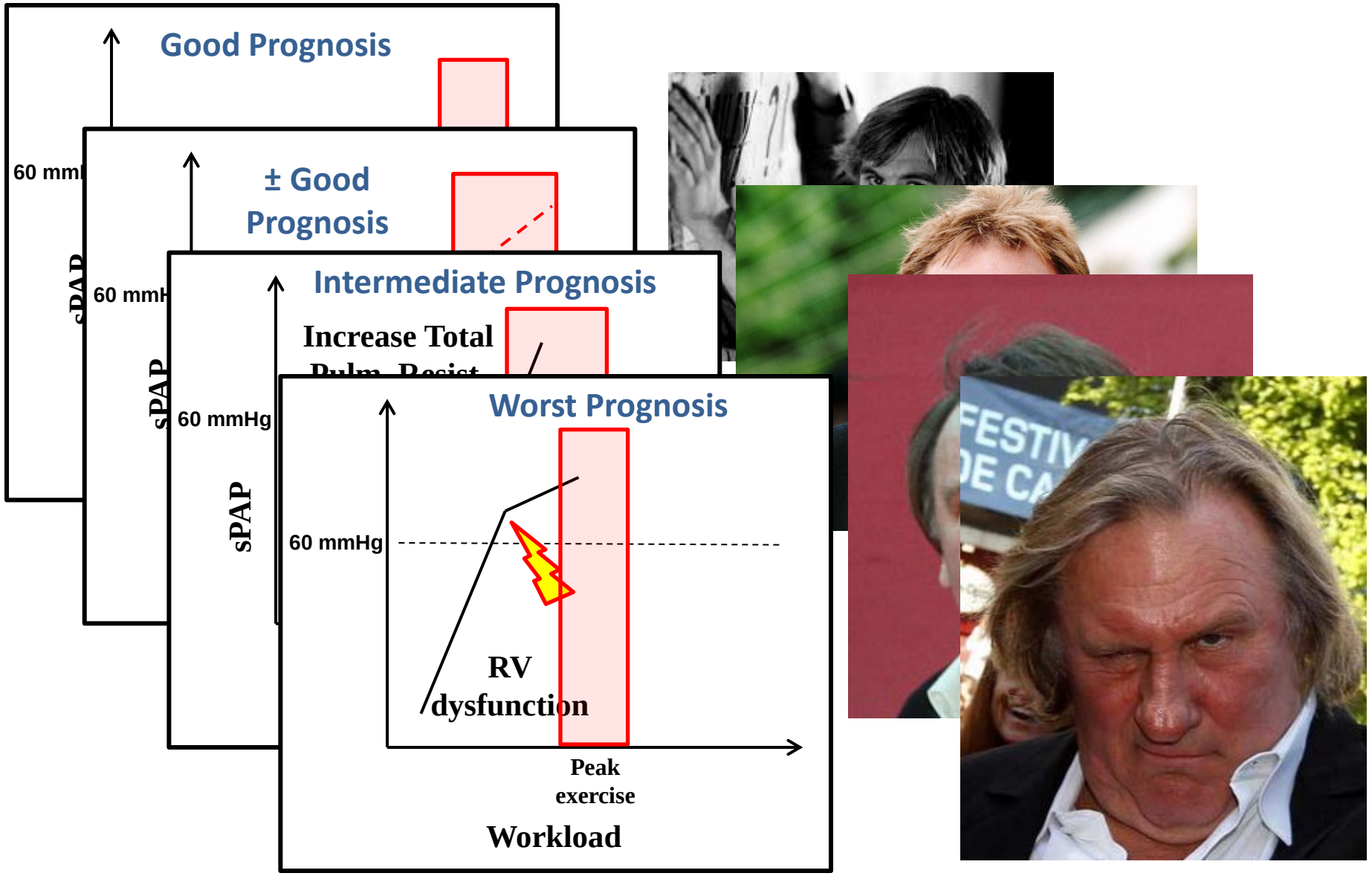






Lewis et al., Circ HF, 2011

Continuum of Vascular Response



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2-5 December 2015

Main Themes

- Cardiomyopathies
- Early diagnosis of cardiovascular diseases

Important deadlines

Abstract Submission 31 May 2015

Early Registration 30 September 2015

www.escardio.org/EACVI