



# The Discrepancy Between Change In Cardiac Function And Symptoms After PPCM

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# How to evaluate symptoms?

- Symptoms  
17 different (Patel Midwifery 2016)
- Likert scale  
Search results  
Items: 0
- New York Heart Association (NYHA) functional classification  
Search results  
Items: 17
- 6- minutes walk test  
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# There is a discrepancy

Variable	Baseline*	6 months*	p Value
<b>Clinical</b>			
Systolic blood pressure (mm Hg)	111±17	113±17	0.18
Diastolic blood pressure (mm Hg)	72±13	72±12	0.65
NYHA functional class, n (%)			
I/II	30 (21)	128 (91)	<0.001
III/IV	111 (79)	13 (9)	
<b>Echocardiography</b>			
LVEDD (mm)	58.9±7.3	54.0±8.6	<0.0001
LVESD (mm)	51.3±7.6	42.3±9.5	<0.0001
Ejection fraction (%)	27.3±8.1	43.3±12.5	<0.0001



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<i>Parameters</i>	<i>Baseline</i> ( <i>n</i> = 43), <i>n</i> (%)	<i>3 months</i> ( <i>n</i> = 37), <i>n</i> (%)	<i>6 months</i> ( <i>n</i> = 35), <i>n</i> (%)	<i>p-value</i>
NYHA class				< 0.001**
I	0	20 (54.1)	23 (65.7)	
II	23 (53.5)	13 (35.1)	9 (25.7)	
III	13 (20.2)	2 (5.4)	2 (5.7)	
IV	7 (39.5)	2 (5.4)	1 (2.9)	

\*\*Significant at  $\alpha = 1\%$

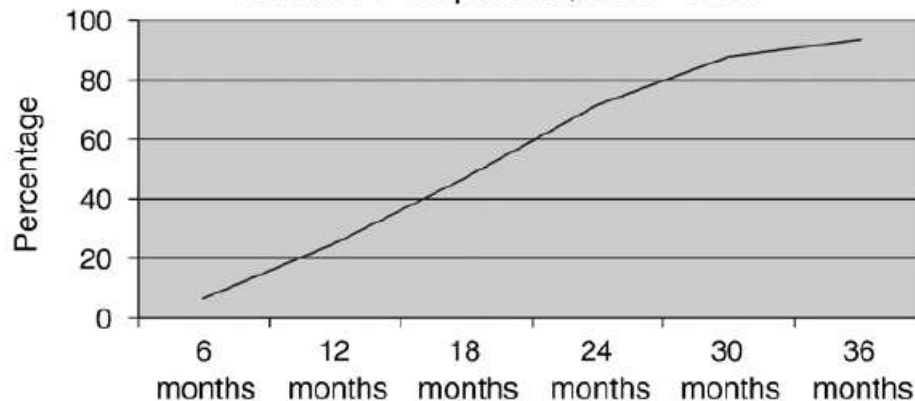
	<i>Baseline</i>	<i>3 months</i>	<i>6 months</i>	<i>0-3 months</i> <i>p-value</i>	<i>0-6 months</i> <i>p-value</i>	<i>3-6 months</i> <i>p-value</i>	<i>All p-value</i>
LVDd (mm)	56.8 ± 6.6	53.9 ± 8.2	53.9 ± 9.2	0.345	0.204	1	0.136
LVEF (%)	29.7 ± 9.8	36.8 ± 13.7	44.9 ± 14.9	0.05	<0.001**	0.028	<0.001**

\*Significant at  $\alpha = 5\%$ , \*\*significant at  $\alpha = 1\%$ .

43% EF > 50% at 6 months

Characteristics	Recovered (n=32)	Nonrecovered (n=84)	P value
Mean age at diagnosis, y (range)	33.8 (17–47)	31.6 (16–50)	NS
Mean parity at diagnosis (range)	4.7 (1–9)	4.3 (1–11)	NS
Mean LVEF at diagnosis (range)	0.28 (0.15–0.40)	0.23 (0.15–0.35)	0.002
NYHA Functional Class III/IV at diagnosis	94% 30/32	92% 77/84	NS

Length of time required for full recovery of  
left ventricular function (EF > 50 %) in 32  
Haitian PPCM patients, 2000 - 2008





# NYHA-evaluation

- In the ward
  - NYHA III-IV, yes
  - NYHA I-II, no
- Short after delivery
- After nine months of pregnancy
- In a person who never sleeps a whole night undisturbed, has no time to go to the gym, no time for her self

# Echocardiography - what is the best measure?

- Ejection fraction, 50% or 55%?
- Longitudinal strain??

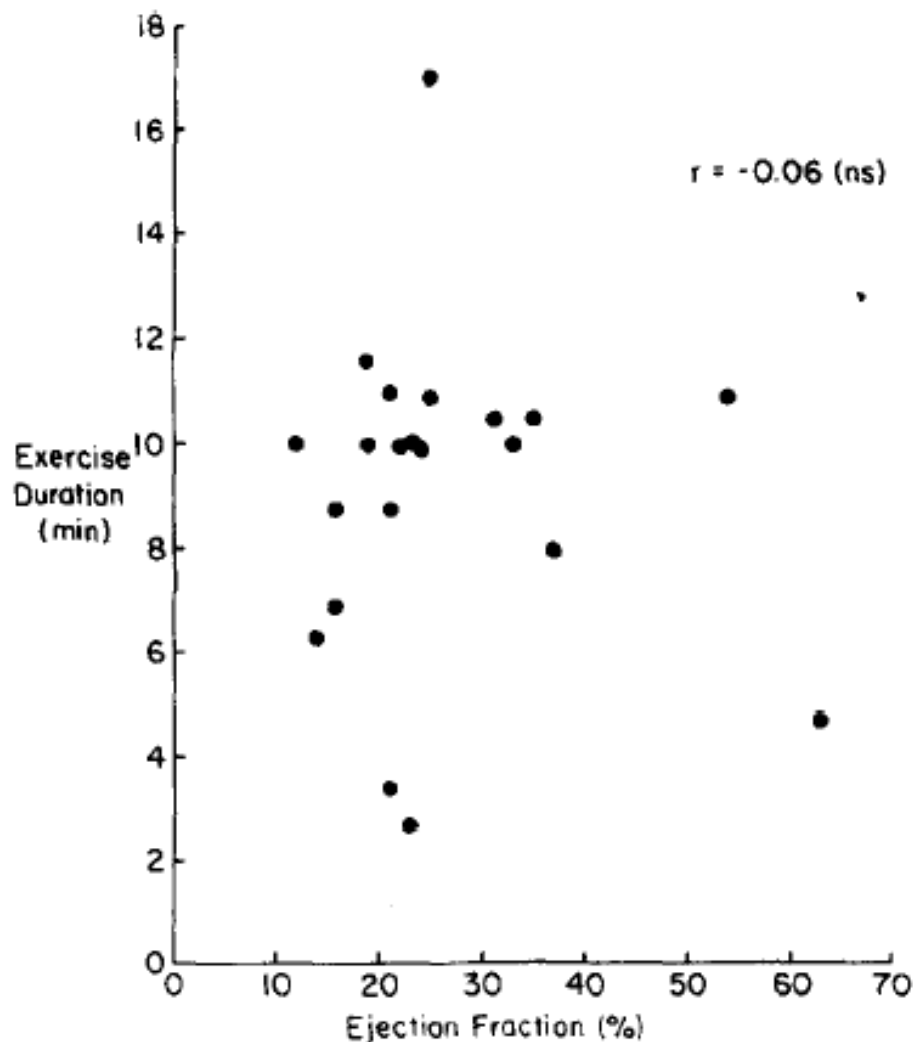
	PPCM (N=47)	Healthy (n=14)
EF, %	29	58
Global longitudinal strain, %	-8.8	-18.1

Adapted from Briasoulis, Echocardiography 2016





# Relation between exercise duration and EF



# Change in fiber distribution and capillary density in HF

	Patients (n = 12)	Control Subjects (n = 8)	<i>P</i>
Fiber type distribution (%)			
Type I	33.7 ± 16.1	44.3 ± 18.3	NS
Type II A	27.8 ± 11.2	29.8 ± 9.4	NS
Type II B	35.9 ± 9.3	24.3 ± 12.8	.03
Type II C	2.5 ± 4.4	1.6 ± 2.0	NS
Fiber area (μm <sup>2</sup> × 10 <sup>3</sup> )			
Type I	5.2 ± 1.5	6.0 ± 2.3	NS
Type II	4.2 ± 1.8	5.3 ± 2.9	NS
Type II A	4.3 ± 1.8	5.6 ± 2.6	NS
Type II B	4.0 ± 1.9	4.6 ± 2.7	NS
Mean fiber area (μm <sup>2</sup> × 10 <sup>3</sup> )	4.5 ± 1.6	5.5 ± 2.6	NS
Capillary density (cap × mm <sup>-2</sup> )	266 ± 98	286 ± 108	NS
Capillary × fiber <sup>-1</sup>	1.1 ± 0.2	1.4 ± 0.3	.02

## Change in skeletal muscle enzyme activity

<i>Enzyme</i>	<i>Patients</i> n=16	<i>Controls</i> n=10
Lactate dehydrogenase	174 (81)†	120 (43)
Phosphorylase	3.2 (1.3)	3.8 (1.6)
Citrate synthetase	3.9 (0.8)*	4.9 (1.5)
3-hydroxyacyl-CoA-dehydrogenase	4.3 (1.0)*	5.4 (1.6)

All values are in  $\mu\text{mol/g ww/min}$ . \* $P \leq 0.05$ , † $P < 0.07$ .



# Symptoms of PPCM at the debute

- Often sudden
- Pulmonary oedema, up to 50% need assisted breathing
- Preeclampsia increases water retention, up to 50%
- Fast effect of loop-diuretics



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**Fast effect of loop-diuretics**



# Can it be the opposite around?

- Of course!
- Psychologic factors like depression and anxiety.



# Patients fear

- *"Impaired capacity", "excessive fatigue" and "Last forces were used to keep going"*
- *Feelings of impending death (n=7), feelings of panic (n=5)*
- *"I was helpless and thought I won't be there for my baby's first birthday"*
- *"ASCH! she (X-ray nurse) said... you won't suffocate...I was afraid to die... She forced me to lie down ...she said 'we can see if you stop breathing'"*



**But...**

*“I felt like the world’s elite team was  
there for me during labor”*





# Summary

- NYHA class recovers faster than EF
- It is not easy to measure NYHA in a PPCM patient
- What shall we use as "recovered" LV?
  
- It can also be the opposite around! The heart recovers before symptoms