

In silico mechanistic assessment of imaging-based measures of cardiac (patho) physiology

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STATEMENTS

1. *Inconsistencies in grading aortic regurgitation severity and overestimation of aortic regurgitation severity by pressure half-time arise from the influence of ventricular and aortic tissue properties. (this dissertation, chapter 3)*
2. *Careful attention to the balance between right and left ventricular myocardial contractile function in pulmonary arterial hypertension may be key for future therapeutic strategies in these patients. (this dissertation, chapter 4)*
3. *The prolonged right ventricular contraction induced by high right ventricular afterload, either already at rest in pulmonary arterial hypertension or at peak exercise in healthy athletic subjects, explains the similar early-diastolic rapid leftward septal motion present in both conditions. (this dissertation, chapter 5)*
4. *The combination of direct mechanical and indirect hemodynamic interaction between the right and left heart during intense exercise can induce a vicious cycle of right ventricular dysfunction and increased hemodynamic load on the heart. (this dissertation, chapter 5)*
5. *Computer models can help to personalize medicine without necessarily requiring the construction of a personalized model. (this dissertation, valorisation)*
6. *Right-to-left ventricular synchrony in all parameters of contraction and relaxation, under wide ranges of heart rates and systemic loads, is key to a successful orchestrated function of the heart. (R. Beyar et al. 2008)*
7. *It is important to realise that overall cardiac performance is determined by two pumps in series and that cardiac output is only as good as the worst ventricle. (A. La Gerche et al. 2015)*
8. *Many good ideas are suggested in the field of cardiovascular research, but the challenge and the beauty of successful research depend on showing them to be true.*
9. *Patience and perseverance is what one learns during a PhD, and joy what one gains for tiny contributions in the magnificent infinite of life.*
10. *The eyes and the heart have unexpected relations: only with the heart can one see truly, whereas a glance of the eye can have positive chronotropic effects on the heart.*

Georgina Palau Caballero

27th January, 2017