SDI Review Form 1.6

Journal Name:	**Annual Research & Review in Biology**
Manuscript Number:	**2013_ARRB_7229**
Title of the Manuscript:	**Initial insight to effect of exercise on maximum pressure in the aortic root using 2D fluid-structure interaction model**
Type of the Article	**Original Research Article**

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline)

PART 1: Review Comments

	Reviewer's comment	Author's comment *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments	The methods are not clearly described at all. I do not understand what are the in- and ouputs of the computation. Many empirical relations are used, whose physiological relevance is never discussed. In particular, the authors state that there exists a nearly perfect ($r^2 = 0.995$) relation between cardiac output and heart rate, which neglects the influence of preload, afterload and contractility. The authors manipulate these relations and come up with other ones, for which they get another r^2. These computations are not clear to me. The authors refer to a paper published by Christie et al. (1987) for two empirical correlations, but I have not been able to find these correlations in said paper. The authors state that the thermodilution technique implies radiations, which is something I am not aware of. This requires justification. The language of the paper is quite poor. The fact that the model is two-dimensional should be mentioned before the discussion. The authors should specify the units they use, as the coefficients of their empirical correlations depend on these units.	
Minor REVISION comments	Line 135: Matlab should be referred to as "MATLAB (Version, MathWorks, Natick, MA)" and not included in the references. There is a confusion between "CDP" and "ADP" in Figure 4 and its legend. « mmHg/heart rate" is not a valid unit. It should be "mmHg*s" or	

SDI Review Form 1.6

	"mmHg*min", according to how the heart rate is expressed. Lines 46-47: "heart" is repeated. Line 106: Please explain what a valsalva is.	
Optional/General comments	The abbreviation MPLV is introduced twice. Line 40: the verb "progressed" seems to be misused. The paragraph running from line 141 to line 149 should be made much shorter for better understanding. I did not understand the meaning of the two sentences in lines 185 to 187. There is something wrong with the prepositions in the sentence: "The FSI simulation can be used to determine a numerical relationship between the cardiac output to aortic diastolic and left ventricular pressures." Line 60: "fluid-structure interaction" should be replaced by "FSI" since you introduced the abbreviation Line 63: "hemodynamics" instead of "hemodynamic" Line 72: no capital letter at "cardiac". Line 84: "to calculate" or "to derive" but not both. Line 445: the legend of Figure 3 is not explicit. Line 122: no capital letter at "left" Line 123: no capital letter at "aortic" Line 125 and 126: For clarity, I would suggest using an exponent rather than the "E" notation. Line 154: no capital letter at "thermodilution" Line 156: no capital letter at "thermodilution" Line 169: "in order to estimate the" instead of "in order to estimation of" Line 179: no capital letter at "thermodilution" Line 191: no capital letter at "one" Line 198: "lets" instead of "let" Line 203: no capital letter at "thermodilution" Line 229: no capital letter at "thermodilution" Capitalize the first letter for "table", "equation" and "figure".	

Note: Anonymous Reviewer