Reviewer's report

Title: Endurance training or beta-blockade can partially block the energy metabolism remodeling taking place in experimental chronic left ventricle volume overload

Version: 2
Date: 23 October 2014

Reviewer: Torsten Doenst

Reviewer's report:

Major Compulsory Revisions

Comments to the Authors:

Patients with chronic aortic valve regurgitation causing left ventricular volume overload can remain asymptomatic for many years. The sudden development of heart failure is not well understood but alterations of myocardial substrate metabolism may be contributive. The authors assessed myocardial energy metabolism in rats with volume overload through aortic valve regurgitation and found alterations in glucose uptake, fatty acid metabolism, mitochondrial function and changes in enzyme activities and gene expression. The alterations in enzyme activities through aortic valve regurgitation were abolished through endurance training of moderate intensity and carvedilol treatment.

General Comments:

This is a well written manuscript addressing myocardial energy metabolism during aortic valve regurgitation. The authors found alterations in left ventricular energy metabolism and a decrease in mitochondrial function. The alterations in enzyme activities through aortic valve regurgitation were abolished through moderate intensive endurance training and carvedilol treatment.

The manuscript addresses an interesting issue and is appropriate for publication in BMC Cardiovascular Disorders. One thing should revised by the authors. They measured glucose uptake, enzyme activities or gene expression to characterize substrate metabolism. These experiments reflect only a small part of substrate metabolism and do not allow a statement about substrate metabolism as a whole. This issue should be discussed and mentioned in the limitations.

Specific Comments:

- The authors assessed glucose uptake, enzyme activities and gene expression to characterize substrate metabolism. These experiments reflect only a small part of substrate metabolism and do not allow a statement about substrate metabolism. Furthermore, gene expression does not correlate with protein expression and the latter does not correlate to activity. These issues need to be stressed and explicitly mentioned in the limitations.

- The methodological part of the manuscript is very short; especially the
description for the enzyme assays is not really informative. For a better understanding an improved description of the underlying methods would be necessary.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.