Reviewer's report

Title: Exercise as 'precision medicine' for insulin resistance and its progression to type 2 diabetes: A research review

Version: 0 Date: 08 Apr 2018

Reviewer: Othmar Moser

Reviewer's report:

I want to thank the authors for this highly interesting and detailed review. From my point of view, I would like to add a few comments:

Page 3/line49: "However, in this initial 'compensation' stage, increased insulin secretion (hyperinsulinemia) secondary to an increase in pancreatic β-cell mass/productivity allows for maintenance of homeostatic levels of plasma glucose."

It might be worth explaining within this content the c-peptide status in relation to hyperinsulinemia. C-peptide can be used as an "early marker" for the diagnosis of pre-T2D. At this stage (elevated c-peptide) exercise could be used as the first treatment.

It might be reasonable to reduce the amount of abbreviations in general. This makes it difficult to understand for the reader.

IMCL is missing in the list of abbreviations.

Page 20: "Similarly, Suk e tal. compared women with T2D with age-, sex- and BMI-matched controls and found that T2D was associated with a lower fatmax (~34 v. ~52% of V O2max)."

The first part of this sentence might be misleading; this means not a lower Fatmax, it means an earlier occurrence in relation to VO2max.

Two meta-analyses should be incorporated:

Impact of different training modalities on glycaemic control and blood lipids in patients with type 2 diabetes: a systematic review and network meta-analysis.

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