

Answering Reviewer

I am grateful to the reviewer for the careful reading of manuscript no 53065 and the raised questions. My findings are summarized below.

1) TITLE: the shortcomings in the curricula of medical education relate glucose effectiveness, insulin sensitivity, biochemical compositions of cell membranes, effects of temperature on biological membranes, membrane flexibility, unsaturation index, slow-down principle, and energy transport. So, I believe that that the article matches the title.

2) ABSTRACT: The term “insulin resistance” is now introduced in the paragraph *Method*. The next question regarding the ABSTRACT is the ‘no potential cause for mitochondrial hyperthermia’. I have therefore rewritten the subparagraph ‘*Results*’.

3) CORE TIPS: The subparagraph ‘*Results*’ mentioned that hyperthermia is counterbalanced by the slow-down principle, which lowers the amount of carbon-carbon double bonds In the subparagraph ‘*Method*’ I have explained: unsaturation index (UI; number of carbon-carbon double bonds per 100 acyl-chains of membrane phospholipids). So, assessment of UI is just as important as assessment of glucose and HbA1c.

4) CELL MEMBRANES: See subparagraph ‘*Method*’ for identification of UI. On page 4 last paragraph I have introduced information about the UI assay.

5) MEMBRANE FLEXIBILITY: I have “hardened” replaced by “increase in vascular stiffness”

6) I revised “thought experiment” in: “to understand the consequences of the slow-down principle, imagine”...

7) HEAT PRODUCTION AND ONSET OF TYPE 2 DIABETES: I revised “It is now time to build a model” in “The reviewed data strongly support an alternative model”.

I revised “Remember that Kelly *et al.*” in “Remember that Kelly *et al.* reported the presence of impaired functional capacity and morphological alterations of mitochondria, which were obtained from ..”

8) EXERCISE: The question is that there is growing awareness of the limitations of animal models. I revised “If this result may be extrapolated to human tissue” in “If the gene expression in the corresponding mouse model does not significantly differ from the human conditions”.

9) FIGURE LEGENDS: Yes, See Fig.1

10) TABLES: I have spelled out the missing abbreviations.