

Review of: "Modelling Skeletal Muscle Motor Unit Recruitment Contributions to Contractile Function: Part 3 - Substrate Oxidation of Phosphagen, Lipid, and Carbohydrate Metabolism"

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Potential competing interests: No potential competing interests to declare.

Dear authors,

The manuscript contains several scientific errors that must be removed. Regardless of whether you aim to publish with Qeios, Springer, Wiley, or elsewhere, it is an essential requirement to substantiate your findings with a deep scientific background and true scientific facts. I am missing some of these; why, at this stage, I would not consider your manuscript to be ready for publication.

The first page of your reference list refers to publications that are quite antique and almost 30 years old.

1st Human muscle fibers do not contain IIB myosin heavy chains. The fast ones are termed IIX in human skeletal muscle.

<https://www.sciencedirect.com/science/article/pii/S0079610700000067> / see also Schiaffino (the paper you cited).

2nd, the distinction that you propose concerning five different genetically expressed fiber types is wrong. I-IIA and IIA-IIX are hybrid fibers which are not per se genetically expressed or have specialized gene loci. These are fibers just showing a mixture of those MHCs and a multitude of other proteins.

3rd, motoneurons that are recruited do not maximally contract upon action potentials.

You write: *According to the "all or none" principle, when muscle contraction occurs, each motor unit recruited contracts maximally (14). This is because action potentials that reach the sarcolemma of each muscle fibre of a motor unit cause a maximal contraction in all the fibres of the motor unit.*

This is not true; the force generated by a motor unit depends on the rate at which it generates action potentials. Whether an AP is induced depends on that principle. By increasing rate coding, the AP frequency increases, leading to increased Ca²⁺ levels and force.

4th, I am missing clear information on how the formulas you used were generated. Where do these values come from?

5th, when you refer to Trappe's paper (<https://pubmed.ncbi.nlm.nih.gov/25749440/>), how would you expect that interindividual differences in contractility expand to fiber type-specific metabolism and influence your modeling?

6th, you should improve the figures. In Figures 1 and 3, X-axis: Is this the same unit? Is it percent in Figure 3?

7th, you should think about colors in the figures, thicker lines, and a clear legend.

8th, I find this topic interesting. But the overall scientific frame, clarity, and comprehensibility at this point are somehow insufficient.