Author's response to reviews

Title: Activation of the dopamine 1 and dopamine 5 receptors increase skeletal muscle mass and force production under non-atrophying and atrophying conditions

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Author's response to reviews: see over
Dear Miss Gorton and the BioMed Central Editorial Team:

We have revised our manuscript entitled “Activation of the Dopamine 1 and 5 Receptors Increases Skeletal Muscle Mass and Force Production Under Non-Atrophying and Atrophying Conditions” by Deborah L. Reichart, Richard T. Hinkle, Frank R. Lefever, Elizabeth T. Dolan, Jeffrey A. Dietrich, David R. Sibley and Robert J. Isfort as suggested by the reviewers. The specific revisions are as follows:

**General**
1. We have made the changes suggested by the Editor including naming the ethics committee that approved our animal studies, revising the competing interest section and copyediting the paper to improve readability.

**Reviewer: Abigail Mackey**
1. We have modified all appropriate parts of the manuscript to more accurately describe our findings.
2. We have addressed the differences in observed body mass.
3. We have addressed the possibility that the uncasted leg was overloaded.
4. We have discussed the apparent mismatch between loss of force and mass.
5. We have modified the last paragraph of the results concerning soleus muscle mass to better reflect the experimental observations.
6. We have modified the discussion to more thoroughly examine the results.
7. Minor Essential Revision 1 - we have included a description of the function of theophylline.
8. Minor Essential Revision 2 – we have modified Table 2 to specify which muscles were casted and uncasted.

**Reviewer: Gordon Lynch**
1. The goal of this work as stated in the Hypothesis Section is to determine if activation of the dopamine 1 and/or 5 receptor will increase skeletal muscle cAMP levels and therefore modulate skeletal muscle mass and force production. We focused on skeletal muscle mass and force production because these two measures provide us with a good picture of overall muscle status since the total mass measurement includes changes in all components of muscle tissue (myocyte, connective tissue, etc.) and total force measurements evaluate if the changes in mass, including muscle fiber cross-sectional changes, translated into functional muscle changes. In addition, these measurements allow for cross-study comparison to our previous published studies on the role of four cAMP modulating receptors and enzymes, CRF2R, PDE4, B2AR and VIP2R, in
modulating skeletal mass and force (the measures we evaluated in our prior publications). While I agree with Dr. Lynch that the measurements he suggest do provide additional information, they are not essential for understanding the role of the dopamine 1 and dopamine 5 receptors in modulating skeletal muscle mass and force which is the stated goal of this publication. As we state in the Discussion, with the novel finding presented in this report that the dopamine 1 and dopamine 5 receptors can modulate skeletal muscle mass and force, future studies will focus on understanding the role that the dopamine 1 and dopamine 5 receptors have in a number of skeletal muscle functions including energy storage, muscle fatigue, muscle biochemistry, muscle fiber composition changes, muscle fiber morphological alterations, connective tissue changes, etc.

2. We have amended the significant figures presented in the tables as suggested.
3. We have reviewed the manuscript for grammatical and typological errors.

Miss Gorton and the BioMed Central Editorial Team, we would like to thank you and the reviewers’ for your helpful review of our manuscript. We hope that with the changes we have made, our manuscript is now ready for publication in *BMC Musculoskeletal Disorders*.

Sincerely,

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