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Corrigendum

Corrigendum to "The effect of resistance training, detraining and retraining on muscle strength and power, myofibre size, satellite cells and myonuclei in older men" [Exp. Gerontol., 133, 2020, 110860]

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The authors regret to have indicated an incorrect reference to the study of Psilander et al. (2019). The statement in our introduction (and discussion) about the loss of myonuclei during inactivity/detraining periods was not observed in the study by Psilander et al. (2019), however it was reported in a secondary analysis in a selected subset of the individuals with a hypertrophic response to the training intervention, published by Murach et al. (2019). The statements referring to this interpretation should therefore only refer to the subanalysis paper by Murach et al. (2019) and not to the original work of Psilander et al. (2019).

In the introduction this should now read: "Nevertheless, acquired myonuclei do not seem resistant to longer periods of inactivity, as recent studies in mice (Dungan et al., 2019) and humans (Murach et al., 2019; Snijders et al., 2019) report that the myonuclear number returned to the untrained state following, respectively, 12 weeks, 20 weeks and 1 year of training cessation."

In the discussion this should now read: "The hypothesis that a muscle memory is residing within the myonuclei (Gundersen, 2016), was recently questioned as RT-induced elevated myonuclear number decreased to the untrained state after long-term training cessation in both mice (Dungan et al., 2019) and humans (Murach et al., 2019; Snijders et al., 2019).

…that myonuclear loss may occur at a slower pace than fibre atrophy, since myonuclear loss has mostly been reported during slow models of atrophy in humans and mice (interruption of training while still maintaining daily life physical activities (Dungan et al., 2019; Murach et al., 2019; Snijders et al., 2019)), and not during fast or invasive ones in humans…".

Also, very recently, Eftestøl et al. (2020), responded to the subanalysis of their data by Murach et al. (2019), information that was not present at the time of our manuscript preparation for publication. As the authors of the original study formulated their concerns on this subanalysis we would also like to reflect this in our manuscript.

We would therefore restate the interpretation of the Murach et al. (2019) paper in our discussion: "Recently, Psilander et al. encountered limited fibre hypertrophy and no significant gain in myonuclei after 10 weeks of RT in 19 young men and women (Psilander et al., 2019). A reanalysis of these data highlighted the variability in the training response between individuals (Murach et al., 2019). *This reanalysis identified 7 individuals who demonstrated muscle hypertrophy and myonuclear accretion following training and 6 of them lost the additional myonuclei during 20 weeks of detraining. However, the results of this reanalysis should be interpreted carefully, as searching for the desired pattern among highly variable human biopsy data cannot be interpreted as evidence for myonuclear loss during detraining. The researchers of the original study also question how myonuclei would be lost by apoptosis without destroying the whole muscle fibre (Eftestøl et al., 2020)…"*.

Given the debate on different observations regarding the loss or prolonged presence of acquired myonuclei by training during a period of detraining or inactivity, we would also like to include the need for further research regarding the muscle memory hypothesis in human intervention studies. This should be included in our final summary statement: "Based on observing the individual subject tracks and recent literature, we propose that myonuclei might be retained during rapid forms of atrophy, but that in the long term, the MND is restored to its

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untrained steady-state. *However, to date, no mechanism has been found that proves how myonuclei could be removed from intact myofibres and thus more human studies are needed to elucidate myonuclear behaviour during detraining using state of the art methodology…*".

The reference to Laurentani et al. should be to the year 2003, not 2020.

Also please find the correct affiliations to the co-authors as stated in this corrigendum.

The authors would like to apologize for any inconvenience caused.

Eftestøl, E., Psilander, N., Cumming, K.T., Juvkam, I., Ekblom, M.M., Sunding, K., Wernbom, M., Holmberg, H.-C., Ekblom, B., Bruusgaard, J.C., Raastad, T., Gundersen, K., 2020. Muscle memory: are myonuclei ever lost? J. Appl. Physiol. 128, 456–457. https://doi.org/10.1152/japplphysiol.00761.2019

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