Reviewer's report

Title: Extremely short duration high intensity training substantially improves insulin action in young healthy males

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Reviewer: Heikki Kainulainen

Reviewer's report:

The epidemics of obesity and metabolic syndrome and type 2 diabetes are spreading alarmingly fast throughout the world. Increased physical activity (along with other life style improvements) is the best and the most economical way to prevent and treat these metabolic disorders. However, individual persons respond differently to exercise (physiological difference) and also respond differently to the present recommendations to exercise (psychological, social or behavioral difference).

This manuscript describes the effects of low-volume high-intensity exercise (HIT) on glycemic control. Results show clear improvement on insulin action after two-week training period, even better improvement than normally seen after conventional aerobic training programs. The presented results accentuate the need to study various modes of exercise that would have (1) beneficial effects on glycemic control and (2) would accommodate to the different individual requirements.

Major compulsory revisions:

No compulsory revision is needed. The manuscript is compact and well written. Used methods are sound. Results are presented shortly and well. Discussion is compact.

Minor essential revisions:

Page 5, NEFA determination: The authors should increase the number of replicates used in the NEFA assay.

Discretionary revisions:

Introduction, first sentences: The authors present data of the prevalence of T2D and economical burden in USA. Maybe it would be more relevant to present world-wide data.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests.