

## **Reviewer's report**

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

**Version:** 1 **Date:** 22 October 2008

**Reviewer:** Athanasios Jamurtas

### **Reviewer's report:**

#### General Comments:

This is an interesting study that examined the effects of extremely short duration high intensity training on insulin action in young healthy males. Even though the paper is well written there are several parts that either needs to be clarified or elaborated. For example the authors examined whether there are any differences in the glycemic control between the second and third day following cessation of the training program. This is not listed as one of the purposes of the study and should be clearly defined. Furthermore, it is not listed in the statistics section that a correlation was run between changes in the biochemical measures and performance. In addition, the authors should separate the effects of HIT on healthy and insulin resistant individuals.

#### Specific Comments:

##### Abstract

P. 2, In 10. Replace "or" with "and"

##### Introduction

P.2, In 1. Reference #12 is not the correct one for the associated statement. Check Godin et al., American Journal of Health Promotion, 1994.

##### Methods

P.5. Indicate the CV values of the biochemical measurements

P. 6, under time trials: Explain why there were two self paced cycling time trials performed? Furthermore, I do not understand what you mean with the phrase "The linear factor .....rate at 90 rpm". Was this a submaximal test? I thought that the time trials were an all out efforts. Please elaborate.

P. 6. Indicate the resistance used for the Wingate test.

P. 6. Indicate whether any soreness was felt by the subjects following this type of training.

P. 7, In 1. Indicate sooner the reason behind the performance of the OGTT two or three days after the last training session. It is not revealed until the discussion!

P. 7. Indicate what kind of correlation was run.

Indicate the accumulated time of an exercise session.

#### Results

P. 8, Last and last but one lines. Present data as (Fig 1C; 0 min: 350+36  $\mu\text{mol.l}^{-1}$  v 60 min: 255+48  $\mu\text{mol.l}^{-1}$ ,  $P<0.01$ ) and (Fig 1C; 0 min: 290+39  $\mu\text{mol.l}^{-1}$  v 60 min: 153+17  $\mu\text{mol.l}^{-1}$ ,  $P<0.01$ ).

P. 9, In 13-14. "Changes in performance.....other changes". Indicate which other changes

P.9, In 17. Include insulin values in the brackets.

#### Discussion

The authors should make an attempt to separate the effects of high intensity training on insulin resistant and healthy individuals.

P. 10, In 4. Change the word "high" from italics to normal.

The authors discuss the role NEFA play on insulin resistance. They should also discuss the possible role the fat intermediates (ceramides, diacylglycerol) might play on insulin resistance and how this factor might be modified by HIT.

P. 11, In11-15. Please check grammar.

P. 12, last Paragraph. Elaborate on the last paragraph.

The authors should also discuss the limitations of the study.

#### References

References appear incomplete (i.e. #2, #10, #15).

References #45 and #46 do not appear on the manuscript!!!

#### Table 1.

Include resting insulin levels.

Move "values ...SD" from the bottom of the table into brackets at the end of the title

#### Figure

Please clarify the legend!!!

Plasma insulin levels at 120 min are messing

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests'