Reviewer's report

Title: Association of circulating irisin and cardiopulmonary exercise capacity in healthy volunteers: Results of the Study of Health in Pomerania

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Reviewer: Apostolos Bossios

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In this paper, Kerstholt and colleagues assess the association of irisin with exercise capacity of adults. Irisin is a relative new myokine that is currently under investigation for its role in regulation of energy metabolism and especially in the balance between white and brown adipose tissue cells. Several studies has study its role in exercise, without however to manage clarify its role.

As irisin, it’s a relative new mediator with a potential role in energy expenditure and thus in obesity a main health issue today, studies as the current one are very welcome.

The study includes a large number of participants, and uses standardize methods to evaluate levels of exercise. Authors did not find a positive link between exercise and irisin. They show data that argues for a seasonal variability of irisin as well as possible sex difference.

Although the data are interest, there are several issues that need to be clarified:

Major Compulsory Revisions

1. One main weakness of the study is that as far as I understand that authors did not measure irisin in correlation to the exercise, i.e. before and after. Although authors discuss it and state that in fact they evaluate irisin in relevance to the physical status, this is important.

As I understand from the methods and from the exclusion criteria, serum sampling could have a time-window up to 100 days in relation to exercise? In up to 100 days even the physical status may change.

Is that the case? Why is that? Authors should state clearly the time interval between exercise test and sampling.

Where any participants that perform the exercise test and leave serum sample at the same time? Did authors perform a sub-analysis on them?

2. As authors discuss, there are reports about irisin and obesity. Authors present data on weight, height and waist circumference. Authors include those factors in their models. Did authors perform analysis using the BMI? Perhaps should be better to show data about BMI i.e. <25, 25-30 and >30. Anny correlation about irisin and BMI?

3. Authors should describe their population better. For example did their subjects
have other co-morbidities? They include smoking. Are there data about COPD? What about medications?

4. Authors find differences upon the sex. Irisin may correlate with muscle status as a myokine. Women after menopause may alter their muscle status. Did authors perform any analysis include as groups women before and after menopause? Is these data available?

5. Authors show nice data about season-variation of irisin. They also discuss the possible reasons for that. As far as I understand each participant gave blood one time and irisin is measured one time per subject. Is that the case? If yes, then authors may have not homogenized populations at each time point/month. Have authors check it out? Authors should describe their sample at each time point/month.

Minor Essential Revisions
1. Authors should state the sensitivity of their ELISA.

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

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests