Reviewer’s report

Title: A three month controlled intervention of intermittent whole body vibration designed to improve functional ability and attenuate bone loss in patients with rheumatoid arthritis

Version: 2 Date: 13 August 2014

Reviewer: Guy Plasqui

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The study will investigate the effect of whole body vibration on functional ability, bone loss and habitual physical activity levels in patients with RA. I believe the study will provide interesting data, also on objectively assessed physical activity in this population. I have stated some comments below.

Major Compulsory Revisions

The paper often refers to the fact that patients with RA are more sedentary than healthy controls. I believe the current literature provides insufficient evidence for that statement. Most studies have used self-report and objective data is very limited.

p.12: “Actical data are recorded in one minute epochs and data are reduced by removing only full days of non-wear time as observed by a full day of zero activity counts.”

It is not necessary to rely on automatic algorithms to detect non-wear time. I would not only exclude days where the monitor wasn’t worn at all but also days with less than 600 min of wear time. Later in this paragraph the authors do state that they will exclude days less than 600 min of wear-time, which seems to contradict the above statement. Please clarify this.

Visual inspection by plotting the minute by minute accelerometer data over time will visualize days where the accelerometer was for example taken off during the day for longer periods of time. Even when a person is sedentary, accelerometer data will rarely reach zero.

Minor Essential Revisions

p.5 “Furthermore, RA patients have long been shown to have a decreased health related quality of life (HRQoL) in comparison to the general population (16), which is largely due to the presence of the chronic pain they experience (ref).” The reference at the end seems to be missing.

p.10, sample size calculation: a reference is missing. Why an SD of 0.19 and clinically relevant difference of 0.22?

Discretionary Revisions
It’s a shame there doesn’t seem to be a validation study of the Actical in daily life (unless I’ve missed it), using the doubly labeled water technique as the reference. This will make it more difficult to interpret the accelerometer data as for example no PAL can be calculated and hence comparison with other studies or healthy control subjects will be more difficult. Also, the validity of the Actical is not proven. The advantage of the study is however that it concerns longitudinal data and the main objective is to address changes in functional ability and other measures such as PA.

I do recommend to also compare the activity counts data from this study with other studies using the Actical performed in a healthy but otherwise comparable population (if available).

Is the measurement of physical activity after 12 weeks performed after the intervention is finished (e.g. week 13) or during the last week of the intervention (week 12). I would choose week 12, as at that point you measure the effect of the intervention on daily physical activity. Then after 6 months you measure possible long-term effects.

The introduction mentions the importance of inflammation. Wouldn’t it be interesting to include a measure of inflammation such as (high-sensitive) CRP?

**Level of interest:** An article of importance in its field

**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.