Reviewer's report

Title: Do strong women have strong bones? A cross-sectional study.

Version: 2 Date: 8 February 2015

Reviewer: Kerstin Landin-Wihelmsen

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MS BMC Musculoskeletal Disorders
Do strong women have strong bones? A cross-sectional study.

The authors have evaluated areal bone mineral density (aBMD) and hip flexor and abductor strength in 863 women, 26-97 years, from the 6-year follow-up phase of an ongoing Osteoporosis study.

There were no correlations between muscle strength and aBMD when adjusted for lean body mass.

It is well known that the aBMD depends on the size of the body. The taller and larger body surface the larger and wider areal BMD. These relations were also reported in this study on page 7 lines 140-145. Subjects with acromegaly have large aBMD of their limbs. To answer the questioned raised in the Title an intervention study would have been of interest. The reader wonders what has been ongoing during the first 5-6 years of the osteoporosis study? Has no intervention or advise on weight bearing exercise been given in a protocol?

Major questions:

Aim: In the aim on page 4 line 76 the authors write that it is uncertain whether it is an improvement in muscle strength or muscle mass that impacts on bone. This has however not been clarified in this study.

Subjects: Why were 188 women excluded? Wouldn’t it have been of interest to study those with the worst aBMD before and after some exercise during the years? It is strange that only 5.3% of the women up in high ages had osteoporosis. What was the purpose of this osteoporosis study? Was there a referral due to a family history or due to suspected low BMD? Why were they selected from the random population to enter this specific bone study?

There are quite a few studies which have shown similar findings and the effect of exercise as well, see ref 15-19.

Hence, the answer of the title is no and the title could be changed to Large muscle mass is associated with large aBMD which is already known. Or the authors must intervene in order to evaluate the initial aim; if the aBMD increases after improved muscle performance.

Level of interest: An article of insufficient interest to warrant publication in a scientific/medical journal
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 interest.