Author's response to reviews

Title: The Effect of Regular Physical Activity on Bone Mineral Density and Fracture Rate in Post-menopausal Women aged 75 and over: a retrospective analysis from the Canadian Multicentre Osteoporosis Study.

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Author's response to reviews: see over
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Editor,
BMC Musculoskeletal Disorders

To the Editor,

Please find attached one (1) copy of a revised manuscript submitted for consideration for publication in BMC Musculoskeletal Disorders. The manuscript, entitled: "The Effect of Regular Physical Activity on Bone Mineral Density in Post-menopausal Women aged 75 and over: a retrospective analysis from the Canadian Multicentre Osteoporosis Study", carries the identification number: MS: 9810954448523464. As requested by Reviewer #2, a number of minor revisions have been made and are documented in this letter.

Thank you for your continued consideration. Please feel free to contact me with any additional questions or concerns.

Best regards,

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Response to Reviewer’s Comments

**BMC Musculoskeletal Disorders** MS: 9810954448523464  
**Revised Title**: The Effect of Regular Physical Activity on Bone Mineral Density in Post-menopausal Women aged 75 and over: a retrospective analysis from the Canadian Multicentre Osteoporosis Study

Author’s responses to reviewers’ comments in italics.

Reviewer #2:

The authors have carefully revised the manuscript and it is much improved, while some comments remain.

1 Introduction – the main purpose is clarified; however, the study is a cross-sectional cohort study evaluating the association between BMD and amount of physical activity and it is therefore not obvious how controls apply. The authors are comparing with the least active proportion of the cohort, although it is not obvious to what extent the groups (activity level (hrs)) have been used for other categorical analyses.

*To reflect the fact that this is a cross-sectional study with no specific “control group”, the research question has been rephrased. It now reads:*  
“*We sought to answer the research question: In post-menopausal women aged 75 and over, does an increase in the amount of regular physical activity performed, measured in hours per week, have a positive effect on bone density?”*

2 Results  
Study Design – the 3rd pg would benefit from adding a summary of Table 2, such as is presented in the Discussion; 71% were active more than 4 hrs per week.

*The 3rd paragraph of the Results section was expanded to address this comment. The 3rd and 4th paragraphs now read:*

“*Participants were asked several questions relating to their level of activity. When asked if they participated in a regular activity program, 47.6% (557/1169) of participants indicated that they did participate in some type of activity program. Participants were asked to indicate how many hours per week they devoted to activities representative of each level of activity – moderate, vigorous or strenuous. Table II summarizes the distribution of each level of activity throughout the participants. A vast majority (93.5%) of participants indicated that they took part in regular physical activity at a moderate level over the previous year. Over half (55.3%) of participants indicated that they were active for a minimum of one hour per day, while only 14.5% of participants were active less than an average of 15-20 minutes each day.*
Vigorous and strenuous activities were much less represented. The majority of respondents indicated that they had little participation in strenuous or vigorous activity. Indeed, only 36 participants (3.2%) indicated that they took part in any amount of regular strenuous activity. Likewise, only 41 participants (3.6%) responded that they were regularly involved in vigorous activity. The small number of participants that reported taking part in regular activity at a level considered strenuous or vigorous was insufficient to perform statistical analysis. As such, only the effect of varying frequency of regular physical activity at a moderate level (MPA) on bone mineral density was analyzed.”

Possible confounding – 1st pg. The detail of participants beyond Caucasian is redundant as the information is clearly presented in the table.

The description of the racial/ethnic make-up was deleted. A reference refers the reader to Table I for more information.

Effect of regular – line 9-11. The information is identical to the table 4 and redundant or highlight what is most striking. Instead it would be very valuable and more interesting if the corresponding values in g/cm², SD or % were presented to allow for an evaluation of the clinical implications. This data is now presented in the Discussion, and while it is appropriate to discuss them they should have been presented before.

The sentences in the Results section were altered to reflect the change in bone density rather than regression coefficient. They now read:

“The greatest effect was noted at the total hip, where an increase in bone density of 0.008 g/cm² was noted. The femoral neck and trochanter showed similar improvements (0.006 g/cm² in each locale). At the lumbar spine, a negative effect on bone density was noted, with a decrease of 0.006 g/cm² noted, suggesting that there is a negative relationship between MPA and bone density, although this finding was not statistically significant (B=-0.006 [-0.013, 0.00], p=0.066).”

The effect of possible confounding –
Please clarify that the effect of physical activity on BMD that might be confounded.

The sentence was altered and now reads:

“To evaluate the effect of possible confounding factors on the relationship between physical activity and bone mineral density, multiple regression analysis was utilized.”

Last pg information from table 5 is identically repeated, which is unnecessary. Please review again for unnecessary duplication of information.

The second half of the paragraph was deleted. The paragraph now ends with a reference to Table V; the sentences listing BMI findings have been deleted.
Discussion – it is vastly more interesting to read. Additional revision should be done in accordance with comments above.

Minor comments
Effects on bone mineral – “The measured changes...” should be the measured differences.

Sentence changed accordingly.

Effects on bone mineral – Last pg on BMI. This is well known and the last 6 lines can be deleted to maintain focus.

The last 6 lines were deleted.

Limitations
Minor comment
“Of the 1169 participants in this study, only 150 reported currently using anti-resorptive medication with 50 using bisphosphonates...” Abbreviate to clarify that it is the confounding effect that can not be evaluated.

Last sentence altered and now reads:
“This represents less than 0.5% of the entire study cohort, an amount insufficient to determine a possible confounding effect of anti-resorptive use.”

Abstract – please review final sentence: decreased ... should be decreases

Corrected.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.