Author's response to reviews

Title: Time-course of Exercise and its Association with 12-Month Bone Changes

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Author's response to reviews: see over
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Dear Dr. Graham,

Thank you for your response on our manuscript. Please find enclosed our revision, in which we have considered the comments given by the reviewer. A detailed list of actions taken during the revision is also provided.

We hope that this version of the manuscript is found suitable for publication in BMC Musculoskeletal Disorders.

Kind regards,
Riikka Ahola (née Heikkinen)
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A detailed list of actions taken during the revision:

We appreciate the comment on the possible explanation for the site-specific bone responses. This has now been further discussed:

“In contrast to mid-femur, no significant associations were found between the loading characteristics and bone changes at the tibia. It has been proposed that the strain stimulus threshold for bone adaptation varies within individual and between different bones depending on the local strain environment [45-47]. In rat ulna, the strain threshold was found to be largest distally, where strains encountered in daily activities were typically higher and smaller more proximally [45]. Additionally, unusual strain distributions (strain gradients) in the bone may be more osteogenic than high strain magnitudes solely [48, 49]. Based on these previous results, the missing loading response at the tibia may be due to the larger strain stimulus threshold at that site. The tibia may have been more accustomed to higher daily loading, than was the femur. Thus, it is possible that higher loads would have been needed in the exercise program of the original study to elicit changes in tibia geometry [10]. Additionally, there might be differences in the sensitivity of QCT method to detect changes in bone at different measurement sites.”