Conclusion: 1) Exercise could promote the absorption and utilization of LC, increase the FFA mobilization to accelerate the metabolism of fatty acid oxidation. If only a simple supplement of LC, the body could not efficiently use exogenous LC. 2) Exercise combined with L-C could change TC and TG in a relatively short period of time, improve the body’s fat metabolism; HDL-c and LDL-c change may take longer time. 3) Combining exercise with complementing L-C could increase the amount of expression of myocardial PPARα. The ascending transportation of fatty acid might improve the expression of PPARα and H-FABP. It is particularly noticeable that exercise and LC may play a role in AMPK-PPAR pathway and the effect of promoting mutual collaboration raises the expression of PPARα. Further research will be needed to confirm these findings.

Methods: Assuming bone strives for homogeneous tissue loading, unit loads are scaled until their summed resultant tissue loading reaches such a state (Fig. 1). Estimates from this reverse engineering approach are useful where the loading was known as well. Finally, estimates matched in vivo force measurements at the human radioulnocarpal joint and the canine ulna. This approach has recently been successfully validated with data and its treatment.

Results: Assuming bone strives for homogeneous tissue loading, unit loads are scaled until their summed resultant tissue loading reaches such a state (Fig. 1). Estimates from this reverse engineering approach are useful where the loading was known as well. Finally, estimates matched in vivo force measurements at the human radioulnocarpal joint and the canine ulna. This approach has recently been successfully validated with data and its treatment.

Objective: Bone’s remarkable capability of adapting its microstructure in response to mechanical loading is well known. Based on this form-function relationship, a bone loading estimation algorithm that allows deriving the loading history of a bone from its microstructure using high-resolution CT and micro-FEM was previously developed.

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Conclusion: We conclude that this newly developed bone loading estimation algorithm provides very reproducible, sensitive, and fairly resolution independent results at up to 75 μm but that resolutions better than 50 μm would be advantageous.

Abstracts

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REVERSE ENGINEERING ESTIMATION OF IN VIVO BONE LOADING HISTORY
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Methods: Assuming bone strives for homogeneous tissue loading, unit loads are scaled until their summed resultant tissue loading reaches such a state (Fig. 1). Estimates from this reverse engineering approach are useful where the loading was known as well. Finally, estimates matched in vivo force measurements at the human radioulnocarpal joint and the canine ulna. This approach has recently been successfully validated with data and its treatment.

Conclusion: We conclude that this newly developed bone loading estimation algorithm provides very reproducible, sensitive, and fairly resolution independent results at up to 75 μm but that resolutions better than 50 μm would be advantageous.