

Study on 3D FE Analysis on Normal and Osteoporosis Mouse Models Based on 3-Point Bending Tests

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Abstract : In this study, a 3-point bending computational analysis of normal and osteoporosis mouse models was performed based on the Micro-CT image information of the femurs. The finite element analysis (FEA) found 1.68 N (normal group) and 1.39 N (osteoporosis group) in the average maximum force, and 4.32 N/mm (normal group) and 3.56 N/mm (osteoporosis group) in the average stiffness. In the comparison of the 3-point bending test results, the maximum force and the stiffness were different about 9.4 times in the normal group and about 11.2 times in the osteoporosis group. The difference between the analysis and the test was greatly significant and this result demonstrated improvement points of the material properties applied to the computational analysis of this study. For the next study, the material properties of the mouse femur will be supplemented through additional computational analysis and test.

Keywords : 3-point bending test, mouse, osteoporosis, FEA

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