Influence of exercise history on fall-induced hip fracture risk.

Hip fracture is a major public health problem. Thin superolateral cortex of the femoral neck experiences unusually high stress in a sideway fall, contributing to hip fracture risk. The aim of this study is to examine how exercise based loading history, known to affect the femoral neck cortical structure, influences fall-induced fracture risk. For this purpose, finite element models were created from the proximal femur MRI of 91 young athletic and 20 control females. Fall-induced superolateral cortical safety factors (SF) were estimated in the distal volume of femoral neck. Significantly higher (p < 0.05) SFs were observed from femoral necks with high impact (H-I), odd impact (O-I), and repetitive impact (R-I) exercise history, indicating lower fracture risk. The results indicate that it is advisable to include some impact exercise in a fracture preventive exercise program.

General information
State: Published

Ministry of Education publication type: A4 Article in a conference publication
Organisations: Civil Engineering, Faculty of Biomedical Sciences and Engineering, Research group: Computational Biophysics and Imaging Group, UKK Institute for Health Promotion Research
Authors: Abe, S., Narra, N., Nikander, R., Hyttinen, J., Kouhia, R., Sievänen, H.
Number of pages: 4
Pages: 464-467
Publication date: 2017

Host publication information
Title of host publication: Proceeding of the 35th International Conference on Biomechanics in Sports : German Sport University Colgne, Cologne, Germany, June 14-18, 2017
Volume: 1
Editors: Potthast, W., Niehoff, A., David, S.
Keywords: Hip fracture, Exercise, Finite element method (FEM), Bone fracture, Bone strength, falling
Links: https://dshs-koeln.sciebo.de/index.php/s/CamALh9yXz0k6Vt#pdfviewer

Bibliographical note
EXT="Sievänen, Harri"
Research output: Scientific - peer-review › Conference contribution