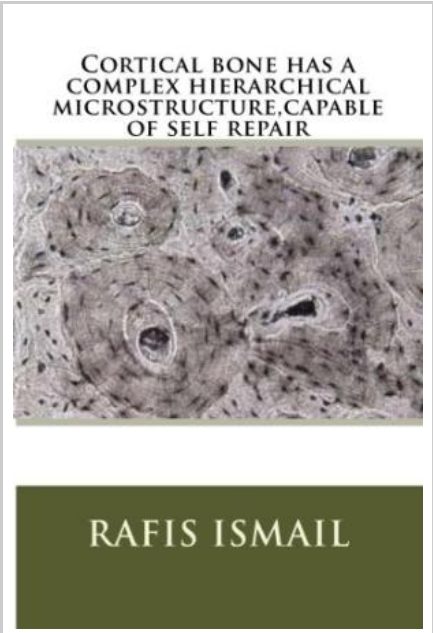

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Cortical Bone Has a Complex Hierarchical Microstructure, Capable of Self Repair (Paperback)

By Ir Rafis Suizwan Ismail MR

Createspace, United States, 2014. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****.Bone s mechanical competence and its fragility in particular depend to a certain extent on the structure and microstructure of the cortical bone compartment. Beyond bone mineral density (BMD) and bone mineral content, a variety of other features of cortical bone contribute to whole bone s resistance to fracture. Structural properties of cortical bone most commonly employed as surrogate for its mechanical competence include thickness of the cortex, cortical cross-sectional area and area moment of inertia. But microstructural properties such as cortical porosity, crystallinity or the presence of microcracks also contribute to bone s mechanical competence. Microcracks in particular not only weaken the cortical bone tissue but also provide an effective mechanism for energy dissipation. Bone is a damageable, viscoelastic composite and most of all a living material capable of self-repair and thus exhibits a complex repertoire of mechanical properties. This review provides an overview of a variety of features of cortical bone known to provide mechanical competence and how these features may be applied for fracture risk prediction.

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