Effects of Joint Incongruity on Articular Pressure Distribution Subchondrial Bone Remodelling

F. Eckstein, B. Merz, C.R. Jacobs
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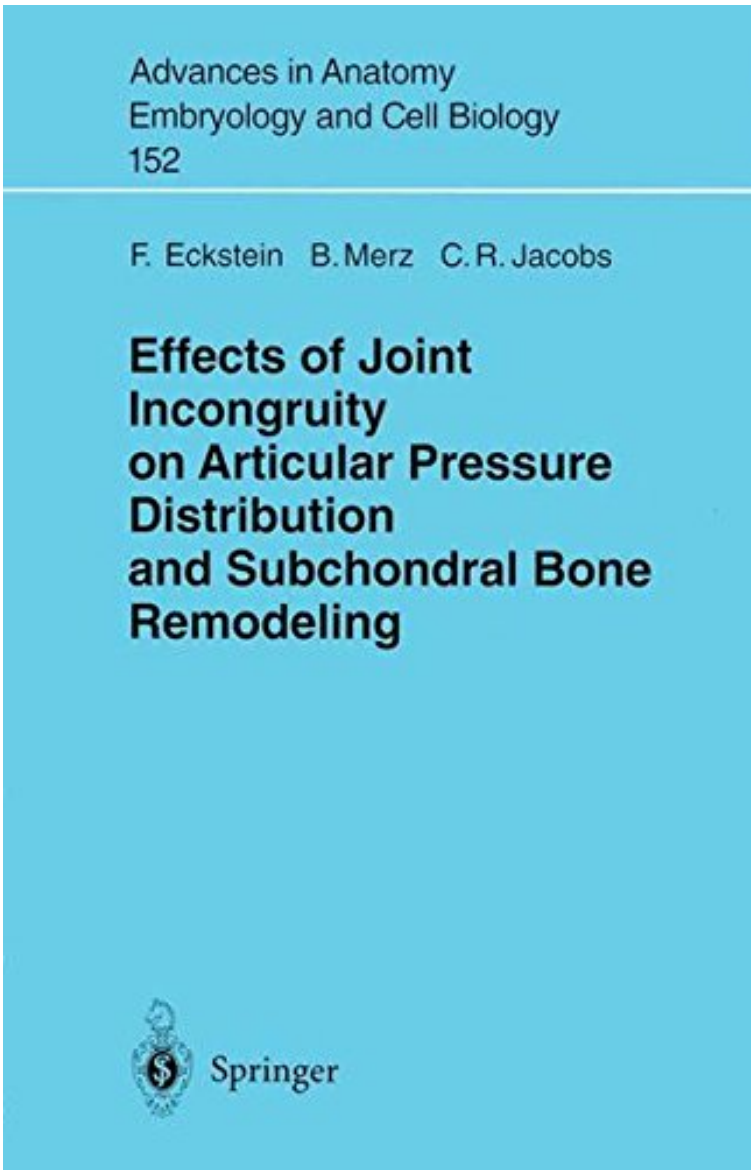

#8800037 in Books Springer 2000-05-19 2013-10-04Original language:EnglishPDF # 1 9.25 x .32 x 6.10l, .65 #File Name: 354066212X129 pages | File size: 61.Mb

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The objective of the present work is to review the existing literature on joint incongruity, cellular mechano-transduction, and computer simulations of mechano-adaptive bone remodelling, and to quantitatively assess the effect of incongruity on load transmission and subchondral mineralisation. Idealised computer models of incongruous joints and a specific anatomically based model of the humero-ulnar joint articulation were analysed with the finite element method, and the results directly compared with experimental and morphological data.

From the Back CoverThis book reviews the existing literature on joint incongruity, on cellular mechano-transduction of bone, on computer simulations of biological adaptation processes and on embryonic joint development. It describes finite element models and biomechanical experiments that attempt to quantify the effect of joint incongruity on load transmission and on subchondral mineralisation in human articulations and shows that the natural incongruity has profound effects on biomechanicas and connective tissue adaptation of human joints. The present study addresses investigators from different fields (biology, medicine as well as bio-engineering) who study the development, morphology, biomechanics and function of human joints.