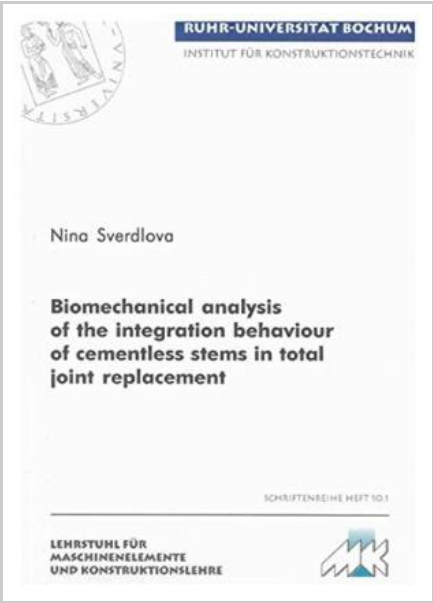

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Biomechanical analysis of the integration behaviour of cementless stems in total joint replacement

By Nina Sverdlova

Shaker Verlag Jul 2010, 2010. Buch. Book Condition: Neu. 21x14.8x cm. Neuware - The total joint replacement presents one of the most important and wide-spread treatments of various diseases of bones and joints. Due to the normal bone reaction to any changed loading, the remodelling processes are triggered in the bone by the implantation of an artificial joint. In particular for the cementless implants, the bone remodelling stimuli may lead to the osseointegration of the implant as well as to an implant failure by implant loosening, which is caused by the atrophy of certain bone regions and loss of the secondary stability reached through the bony integration in a short or in a long term. The preoperative simulation of the mechanical loading of the bone and bony integration of the implant and the prognosis of the longevity of the implant has high clinical and socioeconomic impact. The finite element (FE) method provides a precise tool for the analysis of the stress distribution in the bone with and without stem under given loading conditions. In order to describe the physical behaviour of the skeletal system accurately the boundary conditions, especially the muscular loading, must be physiological. The present thesis focuses on...

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