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The concept of NIBIE in clinical Neuroscience

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The significant development of computer capacity during the last two decades has made it possible to implement various software programs having the capacity to better understand the mechanical consequences following an accident to the central nervous tissue. The next generation of innovative images supporting clinical neuroscience is the introduction of simulation technology. Among those should be mentioned the finite element (FE) method or modeling which goes back more than a hundred years. However, the name finite element was initiated about 60 years ago. The concept of NIBIE, a Non-Invasive Brain Injury Evaluation, is a new technology for measuring and evaluating parameters such as intracranial pressure and strain from CT and MRI scans. The primary purpose of NIBIE is as a diagnostic tool for screening of patients with TBI and observation of intensive care patients with neurosurgical disorders such as hematoma, edema or tumors. Stroke patients may as well benefit from the method. By using numerical models of the human brain it is possible to further optimize the

present treatments of diseases such as TBI. Finally, using NIBIE in education of health care staffs all categories in the new field of neuroengineering is of substantial importance to better understand the consequences of diseases in the central nervous system. NIBIE was created as a result of an interdisciplinary collaborative research project between engineers at the KTH Royal Institute of Technology and neurosurgeons at the Karolinska University Hospital in Stockholm, Sweden.

Speaker Biography

Hans von Holst received his Medical Doctor's degree in 1976 and Specialist in Neurosurgery (1982) at Karolinska University Hospital. In 1985, he earned his PhD and Associate Professorship in Neurosurgery, Clinical Neuroscience at Karolinska Institute. During 1991-1996, he was appointed as Chairman of the Dept. of Neurosurgery and Division Manager of the Neuroclinics at Karolinska University Hospital, respectively. In 1995, he became Professor in Neuroengineering at the Royal Institute of Technology. He has published around 140 original papers in reputed journals, reviews and books and has been serving as an Editorial Board Member in several journals.

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