



Textbook of Neuromodulation: Principles, Methods and Clinical Applications

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Until recently, it was thought that the adult brain is modifiable only during early stages of ontogenesis. However, neurophysiological and neuroimaging studies now indicate that the mature human brain is, under certain conditions, capable of substantial neuroplastic changes. Neuroplasticity reflects the ability of the human brain to alter the pattern of neural activation in response to previous experience, and recent findings indicate that the effects of experience can lead to both structural as well as functional reorganization. It has been shown that pathological neuroplastic changes can be reverted/normalized and that the modulation of the neuroplastic changes can be paralleled by improvement of the patient's status. However, there is a gap between the potential of neuromodulation, technical progress and actual preparedness of medical personnel to provide this type of treatment. A prevalent opinion among medical professionals indicates that training programs and educational materials in neuromodulatory techniques are well needed and appreciated. Neuromodulation will focus on the description and discussion of methods currently available for invasive and non-invasive neuromodulation, their clinical potential, significance and practical applications. In order to facilitate understanding of the topic, the initial part of the textbook will review neurophysiological systems involved in neuromodulation and will provide readers with basic principles of neuroplasticity that constitutes the rationale for neuromodulation in human medicine. Additionally, the clinical use of these techniques will be described with special regard to safety and avoidance of complications.



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Editorial Review

Review

“Written and edited by recognized clinician-researchers in the field, this is a welcome addition to the neuropsychiatric literature. ... This is an excellent and well-written book on neuromodulation. Anyone who wishes to learn about this important field would want to start out with this. I highly recommend it.” (Michael Joel Schrift, Doody's Book Reviews, May, 2015)

“This is a monumental comprehensive book on the diagnostic and therapeutic approaches in neurological & Psychiatric illnesses. ... Psychopharmacologists, neurologists, neurosurgeons, inc. residents, fellows and seasoned practitioners in Psychiatry will all find this text very useful in practice, especially when comparing drug with implant technology. A very good series concerning back pain, chronic headaches, inc. occipital neuralgia, trigeminal disorders, cluster, headaches (HC), and migraines and their treatments are used well here.” (Joseph J. Grenier, Amazon.com, March, 2015)

From the Back Cover

Textbook of Neuromodulation encompasses the basic principles, methods and current clinical applications of invasive and non-invasive neuromodulation. Neurophysiological systems are reviewed along with the basic principles of neuroplasticity that constitutes the rationale for neuromodulation in human medicine. The overview of the neuromodulatory techniques is provided with special regard to safety and specific patient populations. Comprehensive and authored by leaders in the field, this resource presents the clinical potential, significance and practical applications of this innovative treatment approach.

About the Author

Helena Knotkova, PhD is Co-Chief of the Research Division, Department of Pain Medicine and Palliative Care, Beth Israel Medical Center, New York and Co-founder as well as Director of Research at Institute of Non-invasive Brain Stimulation of New York, and Assistant Professor of Neurology, Albert Einstein College of Medicine, Bronx, New York. She is a co-founder of the Special Interest Group on Neuromodulation under the International Association for the Study of Pain (IASP). Dirk Rasche, MD is a general Neurosurgeon and Assistant Professor of Neurosurgery, Department of Neurosurgery, University of Lübeck, Germany. Dr. Rasche is as an active member of IASP, EFIC, INS and multiple other international and national associations.

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Nicole Floyd:

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