# Contents

Contributors, vii

1 History of invasive brain stimulation in psychiatry: Lessons for the current practice of neuromodulation, 1  
   Marwan Hariz

2 Ethics of neuromodulation in psychiatry, 15  
   Joseph J. Fins and Barbara R. Pohl

3 Neurocircuits commonly involved in psychiatric disorders and their stimulation and lesion therapies, 27  
   Sarah R. Heilbronner, Ziad Safadi and Suzanne N. Haber

4 Magnetic resonance imaging in neuromodulation, 49  
   Jonathan Downar and Karen D. Davis

5 Nuclear medicine in neuromodulation, 81  
   Alexandra M. Rodman and Darin D. Dougherty

6 Basic principles of deep brain and cortical stimulation, 101  
   Caio Matias, Scott Lempka and Andre Machado

7 Electrophysiology in neuromodulation: Current concepts of the mechanisms of action of electrical and magnetic cortical stimulation, 111  
   Jean-Pascal Lefaucheur

8 Transcranial magnetic stimulation: Introduction and technical aspects, 125  
   Yiftach Roth, Gaby S. Pell and Abraham Zangen

9 Magnetic stimulation for depression: Subconvulsive and convulsive approaches, 155  
   Andrada D. Neacsiu and  
   Sarah Hollingsworth Lisanby

10 Repetitive transcranial magnetic stimulation for psychiatric disorders other than depression, 181  
   Daniel M. Blumberger, Mera S. Barr and Zafiris J. Daskalakis

11 Direct current stimulation: Introduction and technical aspects, 203  
   André Russowsky Brunoni and  
   Felipe Fregni

12 Transcranial direct current stimulation, 227  
   Colleen Loo and Donel Martin

13 Deep brain stimulation: Introduction and technical aspects, 245  
   Willard S. Kasoff and Robert E. Gross

14 Deep brain stimulation: Clinical results in treatment-resistant depression, 277  
   Shane J. McInerney, Peter Giacobbe,  
   Anna Cyriac and Sidney H. Kennedy

15 Deep brain stimulation for the treatment of obsessive–compulsive disorder, 295  
   Michael Giffin, Martijn Figee and  
   Damiaan Denys

16 Deep brain stimulation: Emerging indications, 309  
   Yasin Temel, Sarah Hescham, Maartje Melse and Veerle Visser-Vandewalle

17 Vagus nerve stimulation: Introduction and technical aspects, 325  
   Jared Pisapia and Gordon Baltuch

18 Vagus nerve stimulation for treatment-refractory depression, 335  
   Charles R. Conway, Britt M. Gott and  
   Naazia H. Azhar
19 Gamma Knife radiosurgery: Introduction and technical aspects, 353
Alessandra A. Gorgulho and Antônio A.F. De Salles

20 Gamma knife surgery: Clinical results, 369
Antonio Carlos Lopes, Marcelo Batistuzzo, Andre Felix Gentil, Marcelo Queiroz Hoexter and Euripedes Constantino Miguel

21 Radiofrequency lesions: Introduction and technical aspects, 385
Seth F. Oliveria, Kristopher G. Hooten and Kelly D. Foote

22 Ablative procedures in psychiatric neurosurgery, 399
David Huie, Joshua P. Aronson and Emad N. Eskandar

23 Electroconvulsive therapy: Introduction and technical aspects, 429
Sandarsh Surya, Peter B. Rosenquist and W. Vaughn McCall

24 Electroconvulsive therapy: Clinical results, 455
Malek Bajbouj

25 Neuromodulation in psychiatry: Conclusions, 467
Paul Holtzheimer, Helen Mayberg, Andres M. Lozano and Clement Hamani

Index, 471