Contents

List of Contributors
Preface

Section 1 Principles of cognitive neurorehabilitation

Introduction to Section 1

1. Principles of neuroplasticity and behavior
   Bryan Kolb and Robbin Gibb

2. Principles of compensation in cognitive neuroscience and neurorehabilitation
   Roger A. Dixon, Douglas D. Garrett and Lars Bäckman

3. The patient as a moving target: the importance to rehabilitation of understanding variability
   Donald T. Stuss and Malcolm A. Binns

4. Hormones and allostatics in brain disease and repair
   Richard G. Hunter and Bruce S. McEwen

5. Principles in conducting rehabilitation research
   Amy D. Rodriguez and Leslie J. Gonzalez Rothi

6. Outcome measurement in cognitive neurorehabilitation
   Nadina Lincoln and Roshan das Nair

7. Principles in evaluating cognitive rehabilitation research
   Keith D. Cicerone
Section 2 Application of imaging technologies 119

Introduction to Section 2 121

8. Structural neuroimaging: defining the cerebral context for cognitive rehabilitation
   Joel Ramirez, Fu Qiang Gao and Sandra E. Black 124

9. Functional neuroimaging and cognitive rehabilitation: healthy aging as a model of plasticity
   Cheryl L. Grady 149

10. Functional brain imaging and neurological recovery
    Maurizio Corbetta 162

11. The role of neuroelectric and neuromagnetic recordings in assessing learning and rehabilitation effects
    Claude Alain and Bernhard Ross 182

Section 3 Factors affecting successful outcome 201

Introduction to Section 3 203

12. Mood, affect and motivation in rehabilitation
    Omar Ghaffar and Anthony Feinstein 205

13. Anosognosia and the process and outcome of neurorehabilitation
    George P. Prigatano 218

14. Psychosocial considerations in cognitive rehabilitation
    Deirdre R. Dawson and Gordon Winocur 232

15. Exercise, cognition and dementia
    Erik Scherder and Laura Eggermont 250

16. Is there a role for diet in cognitive rehabilitation?
    Matthew Parrott and Carol Greenwood 272
Section 4 Pharmacologic and biological approaches

Introduction to Section 4

17. Pharmacologic approaches to cognitive rehabilitation
    Thomas W. McAllister and Amy F. T. Arnsten

18. Pharmacologic treatment of cognitive impairment after traumatic brain injury
    John Whyte

19. Pharmacologic interventions for cognition in dementia
    John M. Ringman and Jeffrey L. Cummings

20. Neurogenesis-based regeneration and cognitive therapy in the adult brain. Is it feasible?
    J. Martin Wojtowicz

21. The impact of cerebral small vessel disease on cognitive impairment and rehabilitation
    Harry V. Vinters and S. Thomas Carmichael

22. Intrinsic and extrinsic neural stem cell treatment of central nervous system injury and disease
    Trudi Stickland, Samuel Weiss and Bryan Kolb

Section 5 Behavioral/neuropsychological approaches

Introduction to Section 5

23. The use of constraint-induced movement therapy (CI therapy) to promote motor recovery following stroke
    David M. Morris and Edward Taub

24. Effects of physical activity on cognition and brain
    Arthur F. Kramer, Kirk I. Erickson and Edward McAuley
25. Aphasia
   Susan A. Leon, Stephen E. Nadeau, Michael
deRiesthal, Bruce Crosson, John C. Rosenbek
   and Leslie J. Gonzalez Rothi  435

26. Rehabilitation of neglect
   Victoria Singh-Curry and Masud Husain 449

27. Rehabilitation of frontal lobe functions
   Brian Levine, Gary R. Turner and
   Donald T. Stuss  464

28. Executive functioning in children with
    traumatic brain injury in comparison
    to developmental ADHD
   Gerri Hanten and Harvey S. Levin  487

29. Rehabilitation of attention following
    traumatic brain injury
   Jennie Ponsford  507
30. Memory rehabilitation for people with brain injury
   Barbara A. Wilson and Narinder Kapur 522

31. Memory rehabilitation in older adults
   Elizabeth L. Glisky and Martha L. Glisky 541

Section 6 Overview 563

32. The future of cognitive neurorehabilitation
   Ian H. Robertson and Susan M. Fitzpatrick 565

Index 575

The plates are to be found between pages 78 and 79.