

Contents

List of Contributors	page ix
Preface	xv
Section 1 Principles of cognitive neurorehabilitation	1
Introduction to Section 1	3
1. Principles of neuroplasticity and behavior	
Bryan Kolb and Robbin Gibb	6
2. Principles of compensation in cognitive neuroscience and neurorehabilitation	
Roger A. Dixon, Douglas D. Garrett and Lars Bäckman	22
3. The patient as a moving target: the importance to rehabilitation of understanding variability	
Donald T. Stuss and Malcolm A. Binns	39
4. Hormones and allostasis in brain disease and repair	
Richard G. Hunter and Bruce S. McEwen	62
5. Principles in conducting rehabilitation research	
Amy D. Rodriguez and Leslie J. Gonzalez Rothi	79
6. Outcome measurement in cognitive neurorehabilitation	
Nadina Lincoln and Roshan das Nair	91
7. Principles in evaluating cognitive rehabilitation research	
Keith D. Cicerone	106

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 293

Introduction to Section 4 295

17. Pharmacologic approaches to cognitive rehabilitation
Thomas W. McAllister and Amy F. T. Arnsten 298

18. Pharmacologic treatment of cognitive impairment after traumatic brain injury
John Whyte 321

19. Pharmacologic interventions for cognition in dementia
John M. Ringman and Jeffrey L. Cummings 334

20. Neurogenesis-based regeneration and cognitive therapy in the adult brain. Is it feasible?
J. Martin Wojtowicz 348

21. The impact of cerebral small vessel disease on cognitive impairment and rehabilitation
Harry V. Vinters and S. Thomas Carmichael 360

22. Intrinsic and extrinsic neural stem cell treatment of central nervous system injury and disease
Trudi Stickland, Samuel Weiss and Bryan Kolb 376

Section 5 Behavioral/neuropsychological approaches 395

Introduction to Section 5 397

23. The use of constraint-induced movement therapy (CI therapy) to promote motor recovery following stroke
David M. Morris and Edward Taub 401

24. Effects of physical activity on cognition and brain
Arthur F. Kramer, Kirk I. Erickson and Edward McAuley 417

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.

Judy P. T. Armistead
Department of Neurology,
Yale University School of Medicine,
New Haven, CT, USA

Lars Bäckman
Karolinska Institute,
Stockholm, Sweden

Malcolm A. Binns
Rotman Research Institute at Baycrest,
Toronto, ON, Canada

Sandra E. Black
Heart and Stroke Foundation Centre for Stroke Recovery
I.C. Campbell Cognitive Neurology Research Unit
Sunnybrook Research Institute
Rotman Research Institute at Baycrest
Division of Neurology, Department of Medicine
Sunnybrook Health Sciences Centre,
University of Toronto,
Toronto, ON, Canada