

Contents

Abbreviations *ix*

Contributors *xiii*

SECTION 1

Scientific basis of clinical neurophysiology *1*

1 Nerve, muscle, and neuromuscular junction *3*

Machiel J. Zwarts

2 The motor unit *9*

David Burke and James Howells

3 Motor control: spinal and cortical mechanisms *19*

David Burke

4 Cortical activity: single cell, cell assemblages, and networks *31*

John G. R. Jefferys

5 Recording of neural signals, neural activation, and signal processing *37*

Dick F. Stegeman and Michel J. A. M. Van Putten

SECTION 2

Techniques of clinical neurophysiology *47*

6 Nerve conduction studies *49*

Jun Kimura

7 Electromyography *67*

Erik Stålberg

8 Quantitative electromyography *81*

Anders Fuglsang-Frederiksen,
Kirsten Pugdahl, and Hatice Tankisi

9 Axonal excitability: molecular basis and assessment in the clinic *97*

Susanna B. Park, Cindy S-Y. Lin, and Matthew C. Kiernan

10 Reflex studies *107*

Josep Valls-Solé

11 Electroencephalography *119*

Michalis Koutroumanidis,
Dimitrios Sakellariou, and Vasiliki Tsirka

12 Intracranial electroencephalographic recordings *131*

Gonzalo Alarcón and Antonio Valentín

13 Magnetoencephalography *149*

Paul L. Furlong, Elaine Foley,
Caroline Witton, and Stefano Seri

14 Transcranial magnetic stimulation *163*

Kerry R. Mills

15 Evoked potentials *175*

Helmut Buchner

16 Polysomnography and other investigations for sleep disorders *187*

Zenobia Zaiwalla and Roo Killick

17 Clinical neurophysiology of the pelvic floor *195*

Adrian J. Fowle

SECTION 3

Clinical aspects: peripheral nervous system *207*

18 The clinical approach to neurophysiology *209*

Kerry R. Mills

19 Focal neuropathies *213*

Jeremy D. P. Bland

20 Generalized peripheral neuropathies *223*

Hessel Franssen

21 Disorders of single nerves, roots, and plexuses *235*

Kerry R. Mills

- 22 Neurophysiology in amyotrophic lateral sclerosis and other motor degenerations** 243
Mamede de Carvalho and Michael Swash
- 23 Clinical aspects of neuromuscular junction disorders** 257
Donald B. Sanders
- 24 Primary muscle diseases** 267
Robin P. Kennett and Sidra Aurangzeb
- 25 Paediatric conditions** 277
Matthew Pitt
- 26 EMG-guided botulinum toxin therapy** 291
V. Peter Misra and Santiago Catania
- SECTION 4**
- Clinical aspects: central nervous system** 299
- 27 Genetic generalized epilepsy** 301
Friederike Moeller, Ronit M. Pressler, and J. Helen Cross
- 28 Focal epilepsy** 313
Tim Wehner, Kanjana Unnwongse, and Beate Diehl
- 29 Syncope** 337
Shane Delamont
- 30 Convulsive and non-convulsive status epilepticus** 345
Matthew C. Walker
- 31 Presurgical evaluation for epilepsy surgery** 355
Robert Elwes
- 32 Encephalopathy, central nervous system infections, and coma** 379
Michalis Koutroumanidis and Robin Howard
- 33 Migraine, stroke, and cerebral ischaemia** 399
Gonzalo Alarcón, Marian Lazaro, and Antonio Valentín
- 34 Electroclinical features of paediatric conditions** 411
Sushma Goyal
- 35 Sleep disorders** 425
Zenobia Zaiwalla and Roo Killick
- 36 Intraoperative monitoring** 437
Marc R. Nuwer
- Index** 451