

CONTENTS

<i>List of figures and tables</i>	viii
<i>Acknowledgements</i>	xii
Introduction	1
PART I	
Theories and models	
1 Theoretical models of motor control and motor learning <i>Adrian M. Haith and John W. Krakauer</i>	7
2 What can we learn from animal models? <i>Eric M. Rouiller</i>	29
3 Postural control by disturbance estimation and compensation through long-loop responses <i>Thomas Mergner</i>	50
4 Motor learning explored with myoelectric and neural interfaces <i>Andrew Jackson and Kianoush Nazarpour</i>	71
5 Biomechanical and neuromechanical concepts for legged locomotion: Computer models and robot validation <i>Andre Seyfarth, Sten Grimmer, Daniel Häufle, Horst-Moritz Maus, Frank Peucker and Karl-Theodor Kalveram</i>	90

PART II

Basic aspects of motor control and learning 111

- 6 Visual activation of short latency reinforcement mechanisms in the basal ganglia 113
Nicolas Vautrelle, Mariana Leriche and Peter Redgrave
- 7 The role of augmented feedback in human motor learning 135
Christian Leukel and Jesper Lundbye-Jensen
- 8 Neuroscientific aspects of implicit motor learning in sport 155
Frank Zhu, Jamie Poolton and Rich Masters
- 9 Mirror neurons and imitation 175
Stefano Rozzi, Giovanni Buccino and Pier F. Ferrari

PART III

Motor control and learning in locomotion and posture 195

- 10 Neural control of walking 197
Michael J. Grey, Laurent Bouyer and Jens Bo Nielsen
- 11 Adaptive plasticity of gait 213
Laurent Bouyer, Michael J. Grey and Jens Bo Nielsen
- 12 Motor control and motor learning in stretch-shortening cycle movements 231
Wolfgang Taube, Christian Leukel and Albert Gollhofer
- 13 Postural control and balance training 252
Wolfgang Taube and Albert Gollhofer

PART IV

Motor control and learning in voluntary actions 281

- 14 Body schema, illusions of movement and body perception 283
Mark Schram Christensen
- 15 Voluntary movement: Limitations and consequences of the anatomy and physiology of motor pathways 304
John C. Rothwell and Jens Bo Nielsen
- 16 Acute and long-term neural adaptations to training 319
Jacques Duchateau, Tibor Hortobágyi and Roger M. Enoka

PART V		
Challenges in motor control and learning		351
17 Motor control and motor learning under fatigue conditions		353
Janet L. Taylor		
18 Movement disorders: Implications for the understanding of motor control		384
Michèle Hubli and Volker Dietz		
Index		409