

Contents

Contributors *ix*

Part 1 **History**

- 1 Historical increases in expert music performance skills:
optimizing instruments, playing techniques, and training 3
Andreas C. Lehmann

Part 2 **Psychology**

- 2 From cognition to action 25
Lutz Jäncke
- 3 The nature of memory for music performance skills 39
Caroline Palmer
- 4 Musical synchronization 55
Bruno H. Repp

Part 3 **Movement analysis**

- 5 Hand movements and musical performance 79
Thomas E. Jerde, Marco Santello, Martha Flanders, and John F. Soechting
- 6 Movement analysis in pianists 91
Hans-Christian Jabusch
- 7 Fingering and bowing in violinists: a motor
control approach 109
Mario Wiesendanger, Andreas Baader, and Oleg Kazennikov
- 8 Movements and analysis of drumming 125
Sofia Dahl

Part 4 **Representation in the brain**

- 9 Brain structures of musicians: executive functions and
morphological implications 141
Gottfried Schlaug
- 10 The motor representation in pianists and string players 153
Lutz Jäncke
- 11 Brain activation during piano playing 173
Marc Bangert

- 12 Brain activation during string playing 189
Arto Nirkko and Romyana Kristeva
- 13 ‘Singing in the (b)rain’: cerebral correlates of vocal music performance in humans 205
H. Ackermann, D. Wildgruber, and A. Riecker
- 14 Sensory–motor networks in singing and speaking: a comparative approach 223
Reyna Leigh Gordon, Amélie Racette, and Daniele Schön
- 15 The role of inhibition in the motor control of finger function 239
Christian Gerloff and Friedhelm Hummel

Part 5 **Apollo’s curse—loss of motor control in musicians**

- 16 The end of the song? Robert Schumann’s focal dystonia 251
Eckart Altenmüller
- 17 Epidemiology, phenomenology, and therapy of musician’s cramp 265
Hans-Christian Jabusch and Eckart Altenmüller
- 18 The neurophysiology of focal hand dystonia in musicians 283
Karin Rosenkranz
- 19 The development of focal dystonia in musicians as a consequence of maladaptive plasticity: implications for intervention 293
Nancy N. Byl and Alberto Priori
- 20 Music performance anxiety 309
Jürg Kesselring