
Contents

Foreword	ix
A Note to the Reader	xi
Preface	xiii
Introduction	xvii
Part 1. Tools and Methodologies	1
Chapter 1. What is Neurofeedback?	3
1.1. Different tools	3
1.2. How a session unfolds	5
Chapter 2. Signal Processing	9
2.1. Receiving and processing the signal	10
2.2. The sampling frequency	12
2.3. Recording the signal	15
2.4. Signal quality	20
2.5. Band-pass filters	22
Chapter 3. The Principle of Homeostasis	27
3.1. Brain waves	27
3.2. The autonomic nervous system	30
3.3. Homeostasis	33
3.4. A stable (but variable) equilibrium	35

Chapter 4. How Neurofeedback Works	37
4.1. The orchestra conductor	38
4.2. Calculating thresholds	40
4.3. The reward	44
4.4. Feedback	46
Chapter 5. Training the Brain	51
5.1. The action of feedback	52
5.2. Neuroplasticity	57
5.3. Activating and blocking neurons (simplified explanation)	59
5.4. Neurofeedback activators and blockers	62
5.5. Appropriate training	65
5.6. Adapting sessions	69
5.7. Positioning the electrodes	73
Chapter 6. Cerebral Areas	75
6.1. Dedicated areas	75
6.2. A symptomatic approach	79
6.3. Association areas	81
6.4. The specific nature of brain waves	84
6.5. Contribution of auditory and visual supports	86
Part 2. Applications	93
Chapter 7. Personal Research	95
7.1. The cerebral hemispheres	96
7.2. Decoding brain waves	100
7.3. Protocol for decoding brain waves	103
Chapter 8. An Aid for Self-Understanding	107
8.1. Stop feeling guilty!	109
8.2. My brain is fighting back	111
8.3. Altered state of consciousness and dissociation	114
8.4. The grieving process	116
8.5. “Everything is set before age six”.	118
Chapter 9. Statistical Information	121
9.1. Every session is unique	122
9.2. Some statistics	124

9.3. “Right brain” versus “left brain”	125
9.4. “Side effects”	128
9.5. The return of symptoms	135
9.6. Suicide attempts	137
9.7. The number of sessions	140
Chapter 10. Clinical Cases	143
10.1. Neurofeedback and depression	143
10.2. Lasting results	146
10.3. Neurofeedback and epilepsy	151
10.4. Neurofeedback and Alzheimer’s and Parkinson’s diseases	152
10.5. A diagnostic tool?	153
10.6. Neurofeedback and multi-handicap	156
10.7. Neurofeedback and ADHD	158
10.8. Neurofeedback and sleep disorders	159
10.9. Neurofeedback and autism	161
Chapter 11. Testimonials	163
Conclusion	167
Appendices	169
Appendix 1. Frequency Table	171
Appendix 2. My Career Path	175
Appendix 3. Acknowledgements	177
Appendix 4. Dr Elie Hantouche	179
Glossary	181
Bibliography	185
Index	189