# Contents

1 History of Cognitive Remediation ........................................ 1

2 The Role of Assessment in Treatment Planning .................... 5  
   Cognitive Domains ....................................................... 6  
   Attention and Concentration ......................................... 7  
   Processing Speed ....................................................... 9  
   Perception ............................................................... 9  
   Sensorimotor Skill ..................................................... 11  
   Language ................................................................. 12  
   Memory ................................................................. 13  
   Intellectual Functioning ............................................... 16  
   Academic Functioning ................................................. 17  
   Executive Functions .................................................... 17  

3 Treatment Strategies ...................................................... 21  
   Mechanisms of Recovery .............................................. 22  
   Compensatory Strategies ............................................. 23  
   Restitutional Strategies ............................................... 24  

4 Cognitive Remediation with NeurXercise ............................ 25  
   Attention and Concentration ......................................... 26  
   Focused Attention ..................................................... 26  
   Sustained Attention ................................................... 27  
   Alternating Attention ............................................... 28  
   Divided Attention ..................................................... 28  
   Processing Speed ...................................................... 29  
   Perception ............................................................. 30  
   Visual Scanning and Tracking ...................................... 30  
   Spatial Organization .................................................. 30
## Contents

### Memory
- Verbal Memory 31
- Visual Nonverbal Memory 32
- Facial Memory 33
- Delayed Memory 33
- Method of Access 33

### Executive Functions
- Set Shifting 34
- Problem Solving: Reasoning and Convergent/Divergent Thinking 34
- Problem Solving: Planning Ahead 35
- Impulse Control 36
- Judgment 36

### Daily Living Skills 37

5 Treatment Generalization and Ecological Validity 39
- Performance on the Training Tasks 39
- Changes on Re-testing 40
- Neurophysiological Change 41
- Ecological Validity 41

6 A NeurXercise Casebook 43
- Etiology 44
  - Head Trauma 44
  - Head Trauma Symptoms and Mechanisms 58
  - Blast Injuries 58
  - Blast Injury Symptoms and Mechanisms 69
  - Stroke 70
  - Stroke Symptoms and Mechanisms 73
  - Neurosurgical Intervention 73
  - Neurosurgical Symptoms and Mechanisms 77
  - Subcortical Disorders 77
  - Subcortical Symptoms and Mechanisms 88
  - Co-morbid Conditions 88
  - Symptoms and Mechanisms in Co-morbid Conditions 93

### Cognitive Domain
- Attention 94
  - Treatment of Attention 99
  - Executive Functioning 100
  - Treatment of Executive Dysfunction 107
- Memory 108
  - Treatment of Memory Deficits 110
- Subpopulations 110
  - Geriatrics 110
<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention Deficit Disorder</td>
<td>111</td>
</tr>
<tr>
<td>Symptoms and Mechanisms in Attention Deficit</td>
<td>113</td>
</tr>
<tr>
<td>(Hyperactivity) Disorder</td>
<td>114</td>
</tr>
<tr>
<td>Learning Disability</td>
<td>119</td>
</tr>
<tr>
<td>Litigation</td>
<td>120</td>
</tr>
<tr>
<td>7  Conclusions</td>
<td>123</td>
</tr>
<tr>
<td>Appendix A</td>
<td>125</td>
</tr>
<tr>
<td>Appendix B</td>
<td>127</td>
</tr>
<tr>
<td>Appendix C</td>
<td>129</td>
</tr>
<tr>
<td>Appendix D</td>
<td>131</td>
</tr>
<tr>
<td>Appendix E</td>
<td>133</td>
</tr>
<tr>
<td>Appendix F</td>
<td>135</td>
</tr>
<tr>
<td>Appendix G</td>
<td>137</td>
</tr>
<tr>
<td>Appendix H</td>
<td>139</td>
</tr>
<tr>
<td>Appendix I</td>
<td>141</td>
</tr>
<tr>
<td>Appendix J</td>
<td>143</td>
</tr>
<tr>
<td>Appendix K</td>
<td>145</td>
</tr>
<tr>
<td>Appendix L</td>
<td>147</td>
</tr>
<tr>
<td>Appendix M</td>
<td>149</td>
</tr>
<tr>
<td>Appendix N</td>
<td>151</td>
</tr>
<tr>
<td>References</td>
<td>153</td>
</tr>
<tr>
<td>Index</td>
<td>157</td>
</tr>
</tbody>
</table>