

Contents

Preface	1
Chapter One	3
<i>Introduction</i>	3
History and Terminology	3
Historical Perspectives on the NDT Approach to Treatment of Children With Cerebral Palsy	4
Current Neuro-Developmental Approach to Treatment of Children With Cerebral Palsy	5
Research and Terminology	6
Chapter Two	9
<i>Cerebral Palsy—The Clinical Picture</i>	9
Do Children With Cerebral Palsy Develop in a Predictable Way?	9
Treating Children With Cerebral Palsy	9
<i>Using the NCMRR Model of Disablement</i>	10
Pathophysiology	10
Impairments	11
<i>Neuromuscular system</i>	12
<i>Sensory/Perceptual systems</i>	13
<i>Musculoskeletal system</i>	14
<i>Respiratory system</i>	15
<i>Other systems to consider</i>	16
Typical Posture and Movement Strategies	18
General Treatment Strategies	19
Chapter Three	21
<i>Children With Hypotonia</i>	21
Pathophysiology	21
Impairments in Hypotonic Cerebral Palsy	22
<i>Neuromuscular system</i>	22
<i>Sensory/Perceptual systems</i>	25
<i>Musculoskeletal system</i>	26
<i>Respiratory system</i>	29

Typical Posture and Movement Strategies	31
<i>Head, neck, tongue, eyes</i>	31
<i>Thoracic spine, ribcage, and upper extremities</i>	34
<i>Lower trunk</i>	39
<i>The pelvic girdle and lower extremities</i>	42
General Treatment Strategies	45
Case Study	57
 Chapter Four	63
<i>Children With Hypertonia</i>	63
<i>Pathophysiology</i>	63
<i>Impairments</i>	64
<i>Neuromuscular system</i>	64
<i>Sensory/Perceptual systems</i>	69
<i>Musculoskeletal system</i>	71
<i>Respiratory system</i>	78
<i>Quadriplegia</i>	79
<i>Typical Posture and Movement Strategies</i>	79
<i>Head, neck, tongue, and eyes</i>	79
<i>Thoracic spine, ribcage, and upper extremities</i>	81
<i>Lower trunk</i>	85
<i>The pelvic girdle and lower extremities</i>	87
<i>General Treatment Strategies</i>	91
<i>Case Study</i>	101
 Diplegia	104
<i>Typical Posture and Movement Strategies</i>	104
<i>Head, neck, tongue, and eyes</i>	104
<i>Thoracic spine, ribcage, and upper extremities</i>	106
<i>Lower trunk</i>	110
<i>The pelvic girdle and lower extremities</i>	113
<i>General Treatment Strategies</i>	116
<i>Case Study</i>	122
 Congenital Hemiplegia	125
<i>Typical Posture and Movement Strategies</i>	125
<i>Head, neck, tongue, and eyes</i>	125
<i>Thoracic spine, ribcage, and upper extremities</i>	126
<i>Lower trunk</i>	128
<i>The pelvic girdle and lower extremities</i>	130
<i>General Treatment Strategies</i>	132
<i>Case Study</i>	137

Chapter Five	141
<i>Children With Athetosis</i>	141
Pathophysiology	141
Impairments in Athetoid Cerebral Palsy	143
<i>Neuromuscular system</i>	143
<i>Sensory/Perceptual systems</i>	144
<i>Musculoskeletal system</i>	147
<i>Respiratory system</i>	151
Typical Posture and Movement Strategies	152
<i>Head, neck, tongue, and eyes</i>	152
<i>Thoracic spine, ribcage, and upper extremities</i>	156
<i>Lower trunk</i>	164
<i>The pelvic girdle and lower extremities</i>	165
General Treatment Strategies	172
Case Study	182
Chapter Six	189
<i>Children With Ataxia</i>	189
Pathophysiology	189
Impairments	191
<i>Neuromuscular system</i>	191
<i>Sensory/Perceptual systems</i>	193
<i>Musculoskeletal system</i>	195
<i>Respiratory system</i>	195
Typical Posture and Movement Strategies	196
<i>Head, neck, tongue, and eyes</i>	196
<i>Thoracic spine, ribcage, and upper extremities</i>	199
<i>Lower trunk</i>	201
<i>The pelvic girdle and lower extremities</i>	203
General Treatment Strategies	206
Case Study	212
References	219
Appendix A	227
<i>A Brief Summary of Normal Development</i>	227
<i>Head, Neck, Tongue, Eyes</i>	227
<i>Thoracic Spine, Ribcage, Upper Extremities</i>	229
<i>The Lower Trunk</i>	234
<i>The Pelvic Girdle and Lower Extremities</i>	238

Appendix B	245
<i>Cocontraction</i>	245
Appendix C	247
Index	249