

Contents

Foreword	xiii
Preface	xv
Chapter 1. Current Theoretical Foundations	1
Development and Philosophy	1
NDT Redefined	2
General Assumptions in the NDT Approach	3
NDT from a New Theoretical Perspective	8
Models of Interactive Systems	9
How Does NDT View the Organization of the CNS for Efficient Motor Control?	14
How Does Efficient Movement Occur?	17
Systems Theory in NDT	17
Neuronal Group Selection Theory	24
How Are Dynamic Systems and Selectionist Theories Applicable in NDT?	27
Generalized Motor Programs—An Alternative Theory	30
How Do the Sensory Systems Contribute to Motor Control?	32
How Does the Environment Contribute to Motor Control?	37
Concepts in Motor Development in NDT	40
NDT Assumptions in Motor Development	44
Theories and Strategies of Motor Learning in NDT	51
NDT Assumptions in Motor Learning	53
Motor Learning and Motor Performance	54
Preparation for Motor Learning	55
Instructions for Motor Learning	56
Practice in Motor Learning	58
Scheduling of Practice	59
Feedback	60
Chapter Summary	62
References	64

Chapter 2. Movement Dysfunction	81
Introduction	81
NDT Enablement Model of Health and Disability	81
Health Condition/Pathophysiology of Disorder or Disease	83
Dimensions and Domains of the NDT	
Health and Disability Model	88
Contextual Factors	91
NDT Assumptions of Motor Dysfunction	97
How Do Impairments in Body Systems Contribute to Movement Dysfunction?	
Classifying Impairments to Function	98
Primary Neuromuscular System Impairments—Positive Signs	99
Primary Neuromuscular System Impairments—Negative Signs	107
Sensory Systems and Sensory Processing Impairments	112
Secondary Impairments in the Neuromuscular	
and Musculoskeletal Systems	116
Other Systems Affecting Motor Function	119
Multisystem Impairments and Effects on Motor Function	123
Motor Function/Dysfunction	126
Atypical Alignment and Abnormal Patterns of Weight Bearing	126
Abnormal Muscle Tone: Hypertonia and Hypotonia	127
Abnormal Postural Tone	129
Balance and Postural Control Problems	130
Kinesiological and Biomechanical Components of Movement	131
Coordination Problems	133
The Problem-Solving Process Applied to a Clinical Example	135
The Process of Recovery and Compensation	137
Cellular Responses to Injury	137
Evidence of Neural Reorganization	139
Non-Neural Factors Contributing to Recovery of Function	140
Implications for Intervention	145
Research in NDT and Evidence-Based Practice	145

Evaluating the Evidence	147
Sackett's Levels of Evidence.	147
The Enablement Model and the Evidence of Outcomes.	150
Evidence-Based Practice.	150
What is NDT Doing to Achieve Evidence-Based Practice?	152
Chapter Summary	153
References.	154
Chapter 3. Principles and Process of Examination	181
Introduction.	181
Principles of Examination and Evaluation.	182
Examination Process.	188
Case Studies: Examination, Evaluation, Plan of Care.	207
Case 1: Child With Cerebral Palsy	207
Case 2: Adult With Stroke.	224
Chapter Summary: A Guide for Organizing an Examination	240
References.	245
Chapter 4. Principles and Process of NDT Intervention	253
Principles of Treatment	253
The Problem-Solving Process in NDT Intervention	266
Case 1: Child With Cerebral Palsy	266
Case 2: Adult With Stroke.	287
Chapter Summary	311
References.	311
Chapter 5. Development of the Bobath Approach	315
Introduction.	315
Who Were the Bobaths?	315
Early Observations and Operational Assumptions	318
Theoretical Basis: What Evidence Was There That These Assumptions Were Correct?	330
The Model of CNS Organization in Bobath Theory	331
What Principles of Clinical Practice Were Supported by This Theory?	351

Treat the Whole Person	352
Examination Process	352
Early Intervention	354
Motor Development in Treatment	354
Functional Carryover and Home Programs	355
Treatment Strategies	356
Summary: Comparison of Ideas, 1950s and 2000s.	364
Where Will We Go from Here?	364
References.	365
Index	371