

Table of Contents

Forewordxi
--------------------	-----

CHAPTER 1

Musculoskeletal Pain: The Big Picture	1
Complex and Chronic Nature of Musculoskeletal Pain.	2
Factors Correlated with Musculoskeletal Pain.	2
<i>Socioeconomic Status</i>	2
<i>Age</i>	2
<i>Gender</i>	3
<i>Race and Culture</i>	4
<i>Cognition Level</i>	5
<i>Other Factors</i>	5
Current Practice Patterns: Variability in Care	6
<i>Quality of Care</i>	7
<i>Defensive Medicine and Routine Practice</i>	7
<i>The Case for Conservative Care</i>	7
Better Care via Classification Systems	8
<i>Pain Mechanism Classification Systems</i>	9
<i>Mechanical Diagnosis and Therapy</i>	11
Conclusion.	11

CHAPTER 2

Overview of the Pain Mechanism Classification System and Mechanical Diagnosis and Therapy	17
Brief Review of the Nervous System	18
Peripheral and Central Factors in Pain	18
Pain Mechanism Classification System Categories.	20
<i>Nociceptive:Inflammatory</i>	21
<i>Nociceptive:Ischemia</i>	21
<i>Peripheral Neurogenic</i>	22
<i>Central Sensitization</i>	22
<i>Affective</i>	22
<i>Motor/Autonomic</i>	23
Clinical Practice Considerations in the Use of the PMCS	23
<i>Acute Versus Chronic Pain</i>	23
<i>Features of the Pain Experience</i>	24
<i>Clinical Reasoning in Subjective Evaluation</i>	26

Intervention with CNS Mechanisms	26
Intervention with PNS Mechanisms	27
<i>Derangement Syndrome</i>	28
<i>Dysfunction Syndrome</i>	29
<i>Posture and Other Syndromes</i>	29
<i>Restoration of Function in MDT</i>	29

CHAPTER 3

Subjective Evaluation	33
Review of the Evidence on Musculoskeletal Pain Evaluation and Management	33
Information Gathered in the PMCS Subjective Evaluation	34
<i>Pain Location, Description, and Frequency</i>	35
<i>Onset or Mechanism of Injury</i>	37
<i>24-Hour Behavior of Symptoms</i>	37
<i>Aggravating and Alleviating Factors</i>	38
<i>Thoughts, Beliefs, and Cultural Attitudes Regarding Pain</i>	41
<i>Past and Current Treatments</i>	44
<i>Readiness for Treatment</i>	44
Use of Measurement Tools in the Subjective Evaluation	50
Use of the Management Plan in the Subjective Evaluation	51
Use of Patient Education in the Subjective Evaluation	52

CHAPTER 4

Nociceptive Pain Mechanisms: Inflammation and Ischemia	59
Types of Inflammation	60
<i>Chemical Inflammation</i>	61
<i>Mechanical Inflammation</i>	61
Connective Tissue Healing and Repair	62
<i>Nociceptive:Inflammatory Pain Mechanism</i>	63
<i>Nociceptive:Ischemia Pain Mechanism</i>	63
Healing Processes in Specific Tissue Types	68
<i>Bone</i>	68
<i>Ligament</i>	68
<i>Intervertebral Disc</i>	69
<i>Tendon</i>	69
<i>Muscle</i>	72
Nociceptive Pain Mechanism Evaluation	73
<i>Subjective Evaluation</i>	74
<i>Objective Evaluation: Repeated Movement Examination</i>	75
Intervention for Nociceptive Pain Mechanisms	78
<i>Guidelines for Establishing the Activity Baseline</i>	79
<i>Guidelines for Management of Flare-Ups</i>	82

CHAPTER 5

Peripheral Neurogenic Pain Mechanism	105
Characteristics of Peripheral Neurogenic Pain	106
Role of Neurodynamics in Classifying Mechanical Problems Related to PNPM. . .	107
Peripheral Nerve Clinical Anatomy	107
<i>Peripheral Nerve Mobility</i>	108
<i>Peripheral Nerve Dynamics</i>	109
<i>Spinal Cord Dynamics</i>	110
<i>Axoplasm</i>	110
<i>Peripheral Nerve Conduction</i>	110
Peripheral Nerve Injury and Impairment	111
<i>Nerve Conduction Impairment</i>	112
<i>Abnormal Impulse-Generating Sites</i>	113
PNPM Connection to Central Sensitization	114
Nerve Pain Subjective Evaluation	115
<i>Location</i>	115
<i>Description</i>	115
<i>Frequency</i>	116
<i>Onset or Mechanism of Injury</i>	116
<i>24-Hour Behavior of Symptoms</i>	117
<i>Aggravating and Alleviating Factors</i>	117
<i>Thoughts, Beliefs, and Cultural Responses</i>	118
<i>Past and Current Treatments</i>	118
Nerve Pain Objective Evaluation	119
<i>Nerve Conduction Examination</i>	119
<i>Neurodynamic Examination</i>	122
<i>Clinical Reasoning in Neurodynamic Testing</i>	130
PNPM Mechanical Dysfunction	132
<i>Container-Dependent Dysfunction</i>	132
<i>Neural-Dependent Dysfunction</i>	132
<i>Clinical Reasoning in Differentiating Container-Dependent and Neural-Dependent Dysfunction</i>	132
PNPM Management and Intervention	134
<i>Intervention Strategies</i>	135
<i>Management of Container-Dependent Dysfunction</i>	140
<i>Management of Neural-Dependent Dysfunction</i>	141

CHAPTER 6

Central Sensitization Pain Mechanism	187
Central Nervous System Sensitizing Processes	188
<i>Peripheral Sensitization</i>	188
<i>Plasticity in the Spinal Cord</i>	189
<i>Supraspinal Modulation</i>	189

Role of the Brain in the Pain Alarm System 191

Central Nervous System Pain Mechanisms 192

Health Care Models in Chronic Pain Treatment 192

Psychology in Pain Management 194

Pain Evaluation for Central Sensitization 195

Subjective Evaluation 195

Maladaptive Pain Behavior 197

Objective Evaluation 197

Central Sensitization Screening Tools and Tests 198

Waddell's Tests 198

Fear-Avoidance Beliefs Questionnaire 198

Pain Pressure Thresholds 200

Thermal Pain Thresholds 200

Light Touch 201

Diaphragm Breathing Test 201

Selecting a Screening Tool or Test 202

Central Sensitization Management and Intervention 203

Patient Education 204

CHAPTER 7

Affective Pain Mechanism 237

 Connection Between Psychosocial Factors and Pain 238

Classification of Psychosocial Factors in Health Care Practice 239

Identifying the Connection Between Patients' Thoughts and Behaviors and Pain 241

 Conscious and Unconscious Psychosocial Aspects of Disabling Musculoskeletal Pain 242

Affective Characteristics of the Conscious Mind 242

Affective Characteristics of the Unconscious Mind 250

 Clinician Psychology 252

 Affective Pain Mechanism Evaluation 255

Readiness to Change Education and Assessment 255

Use of Psychosocial Screening Tools 256

Assessment of Coping Strategies 259

 Intervention to Address the Affective Pain Mechanism 261

Biopsychosocial Approach 261

Motivational Interviewing 263

Nonpharmacy Approaches to Pain 266

 Conclusion 282

CHAPTER 8

Motor/Autonomic Pain Mechanism	317
Complex Regional Pain Syndrome	318
Principles of Neuroplasticity and Cortical Reorganization	322
<i>Cortical Representation</i>	323
<i>Mirror Neurons</i>	324
<i>Facilitation and Disinhibition</i>	325
<i>Body Matrix</i>	325
Subjective Evaluation for the Motor/Autonomic Pain Mechanism	326
<i>Location</i>	326
<i>Frequency of Pain</i>	326
<i>Descriptors</i>	326
<i>Onset</i>	327
<i>24-Hour Behavior</i>	327
<i>Psychological and Social Status</i>	327
<i>Thoughts, Beliefs, and Culture</i>	327
Objective Evaluation for the Motor/Autonomic Pain Mechanism	328
<i>Clinical Examination</i>	328
<i>Sensory Screening Tools</i>	329
<i>Motor Screening Tools</i>	332
Intervention for the Motor/Autonomic Pain Mechanism	335
<i>Patient Education</i>	335
<i>Training from the Brain to the Periphery</i>	336
<i>Training from the Periphery to the Brain</i>	339
<i>Sensorimotor Retraining Programs</i>	342
Conclusion	344

Patient Education Handouts

Figure 4.1	Nociceptive:Inflammatory Pain Mechanism Patient Education Handout	64
Figure 4.4	Nociceptive:Ischemia (Overuse) Pain Mechanism Patient Education Handout	77
Figure 4.6	Baseline Activity Tolerance Tool Patient Education Handout	81
Figure 5.2	Nerve Pain Patient Education Handout	136
Figure 6.7	Persistent Musculoskeletal Pain Patient Education Handout	206
Figure 7.1	Tension Myositis Syndrome Patient Education Handout	253
Figure 7.2	Musculoskeletal Pain Mechanisms Patient Education Handout	264
Figure 7.4	Active Sleep Restoration Strategies Patient Education Handout	269
Figure 8.6	Graded Motor Imagery Patient Education Handout	337
Figure 8.8	Stress Loading Patient Education Handout	340
Figure 8.9	Desensitization Patient Education Handout	341