

CONTENTS

Preface vii

Acknowledgments xi

PART I Introduction to Skill Acquisition Theory and the Constraints-Led Approach 1

CHAPTER 1 Traditional Theories of Skill Acquisition 3

Skill Acquisition: Definition and Theories	4
Common Features of Traditional Theories	17
Implications for Movement Practitioners	21
Summary	27

CHAPTER 2 Physical Constraints on Coordination: Dynamical Systems Theory 29

Complex Systems: A Definition	30
Constraints on Complex Systems	32
Emergent Behavior in Human Movement	36
Constraints and Movement Coordination	39
Interacting Constraints	42
Coordination Processes in Human Movement Systems	43
Functional Role of Variability in Movement Systems	48
Summary	51

CHAPTER 3 Informational Constraints on Coordination: An Ecological Perspective 55

Ecological Psychology and Information	56
Information–Movement Coupling	65
Haptic Information Constraints on Movement	73
Acoustic Information Constraints on Movement	75
Summary	78

CHAPTER 4 Redefining Learning: A Constraints-Led Approach 81

The Perceptual-Motor Landscape	82
Newell's Model of Motor Learning	85
Practical Issues for Learning	94
Role of the Movement Practitioner: Nonlinear Pedagogy	98
Hands-Off Practitioners	99
Summary	101

PART II Applying the Constraints-Led Approach 105

CHAPTER 5	Understanding the Dynamics of Skill Acquisition.	107
	Constructing the Perceptual-Motor Landscape	108
	The Practitioner's Perspective	117
	Summary	126
CHAPTER 6	Dealing With Individual Differences: Implications for a Nonlinear Pedagogy.	129
	Intrinsic Dynamics of the Movement System	130
	Variation in Athletic Performance	133
	Individual Differences in Practical Settings	141
	Developing Decision-Making Skills	147
	Summary	150
CHAPTER 7	Organizing Practice to Optimize Learning	153
	The Constraint of Time in Practice	154
	Manipulating Task Constraints in Practice	157
	Strategies for Structuring Practice	164
	Summary	169
CHAPTER 8	Using Verbal Guidance as an Informational Constraint on Learners	173
	Effectiveness of Verbal Communication Strategies	174
	Verbal Communication as a Temporary Informational Constraint	178
	Attentional Focus and Verbal Communication	178
	Interaction of Verbal Instructions and Feedback	184
	Verbal Communication and Movement Disorders	186
	Summary	187
CHAPTER 9	Observational Learning as Directed Search	189
	Directed Search and Observational Learning	190
	Observational Learning in Social Contexts	192
	Visual Perception Perspective on Observational Learning	194
	Learner-Regulated Video Feedback	202
	Summary	204
CHAPTER 10	Implementing the Constraints-Led Approach: Case Studies	207
	Practice and an External Focus of Attention	208
	Dynamics of Learning the Soccer Chip	210
	Individual Differences in Amputee Gait	212
	Practice Organization for Soldiers	215
	Instructions for Student Drivers	217
	Modeling to Direct Students' Learning	219