## Contents

Chant	n 1	D. Maximize Recovery Strategies; Minimize Companiation	
Chapte	er 1	Evidence-Based Practice and Activity-Based Therapy for Recovery of Posture, Standing, and Walking	3
		A. Step Training 46	
I.	Rel	habilitation of Walking After Neurologic Injury	
		Disease: A Historical Perspective 4	
II.	Red	covery of Posture and Walking After Spinal Cord Injury 5	
	A.	Functional Deficits After Spinal Cord Injury 6 84 4 Sendil A	
	B.	Physical Rehabilitation After Spinal Cord Injury 8	
III.	Red	covery of Posture and Walking After Stroke 10	
	A.	Functional Deficits After Stroke 10	
	B.	Physical Rehabilitation After Stroke 12	
IV.	Evi	dence-Based Practice 12 08 sommuball A	
	A.	Evidence-Based, Restorative Strategies for Rehabilitation	
		After Neurologic Insult: Locomotor Training 13 13 13 13 13 15 15 15 15 15 15 15 15 15 15 15 15 15	
Chapte	er 2	Evidence for Locomotor Training	21
I.	Ne	ural Control of Locomotion 22	
1.	A.	Central Pattern Generation 22 Semilable Distriction 22	
	В.	Interaction of Sensory Input with Spinal Cord Interneuronal Networks 23	
	C.	Activity-Dependent Plasticity and Task-Specific Training 24	
II.		dence of Sensory Processing by Human Spinal Networks 24	
III.		unslation of Scientific Evidence into a Rehabilitation Intervention 26	
111.	A.	Activity-Based Therapy (Locomotor Training) 26	
		i. Maximize Weight-Bearing on the Legs (Principle 1) 27	
		ii. Optimize Sensory Cues (Principle 2) 28	
		iii. Optimize the Kinematics (i.e., Trunk, Pelvis, and Lower Extremities)	
		for Each Motor Task (Principle 3) 28	
		iv. Maximize Recovery Strategies; Minimize Compensation	
		Strategies (Principle 4) 29	
	В.	Clinical Evidence for Functional Recovery in Spinal Cord Injury 29	
	C.	Clinical Evidence for Functional Recovery in Stroke 31	
		A Client Position of the covery 116 dd noticed and control of	

Chapte	er 3	Locomotor Training as an Activity-Based Therapy for Posture, Standing, and Walking	40
Gunes	ville	FL	
I.		mpensation-Based Rehabilitation to Activity-Based Therapy 41	
		Compensation Approaches 42	
		Activity-Based Therapy 43	
II.		comotor Training Principles 43	
	A.		
	В.	1 1 1 1 1	
		Optimize Kinematics for Each Motor Task (Principle 3) 44	
	D.	Maximize Recovery Strategies; Minimize Compensation	
Institution		Strategies (Principle 4) 45	
III.		comotor Training Therapeutic Components 45	
	A.	1 0	
	В.	Overground Assessment 47	
Casa		Community Integration 47	
IV.		ases of Recovery 47	
		Phase 1 48	
		Phase 2 48	
	C.	Phase 3 48	
		Phase 4 48	
V.		eas of Progression 50	
	A.		
	В.	Speed 50 manufactured and estimated avoid to the control of the co	
	C.		
	D.		
VI.		nical Model 51	
	A.	Equipment 51	
	В.	Staffing 51 SS melionatope. Ho. lorano C. lerue M	
	C.	Clinical Guidelines 52	
Chapte	r 4	Basic Skills for Implementation of Locomotor Training	54
I.	Pro	oper Attire, Harness Application, and Support Apparatus 55	
	A.	Proper Client Attire 55	
	B.	Applying the Harness 56	
		i. Pelvic Belt Placement 57	
		ii. Harness Vest Placement 58	
		iii. Leg Strap Placement 58	
		iv. Final Adjustments and Troubleshooting Harness Fit 59	
	C.	System Requirements 60	
	D.	Positioning Client on Treadmill with Body Weight Support 62	
II.	Cli	ent and Trainer Positions During Standing 64	
	A.	Client Position 66	
	B.	Hip Trainer 66	
	C.	Leg Trainers 68	

III.	Client and Trainer Positions During Stepping 70	
	A. Client Position 1971 Annual	
	B. Hip Trainer 72	
	C. Leg Trainers 72	
	D. Alternate Hand Placements 76	
	i. Reverse Hand Placement 76	
	ii. Modified Standard Hand Placement 78	
	Sund Client Position 147 - 211 villdagebA brand	
Chapte		85
I.	A Company of the Comp	
II.	Step Retraining 87	
	A. Initiation 8/	
	b. Stance 88	
	C. Stance-to-Swing Transition 89	
	D. Swing 89	
	E. Swing-to-stance Transition 90	
	7 8 11	
III.	Step Adaptability 90	
IV.	Stand Retraining 91	
V.	Stand Adaptability 92	
VI.	Team Roles 93	
	A. Client 93	
	B. Team Leader 94	
	C. Hip Trainer 94	
	D. Leg Trainers 94	
	E. Body Weight Support on the Treadmill Operator 97	
	Provession by Pluse of Receivery and Locumeror Training Component 193	
Chapte	er 6 Introduction to Overground Assessment and	
	Community Integration	98
T	Oversement Assessment 129	
I.	Overground Assessment 100	
	A. Trunk Stability 100	
	B. Sit to Stand 100	
	C. Stand 101	
**	D. Initiating Walking 103	
II.	Community Integration 104	
	A. Functional Goals for Mobility 104	
	B. Sit to Stand 106	
	C. Stand 106	
	D. Walking 109	
	E. Introducing Assistive Devices 110	
	i. Optimal Client Position 139, 871 gantari Past	
Chapte	er 7 Phases of Recovery	114
I.	Introduction to Four Phases of Recovery 116	
II.	Chicago National Control of the Cont	
11.	8 1 8	
	A. Stand Retraining 117 mounts and James Company	

	i. Optimal Client Position 117	
	ii. Trainer Instructions 118	
	a. BWST Operator 118	
	b. Hip Trainer 118	
	c. Leg Trainers 118	
	d. Assessment 118	
	iii. Scoring 119	
	Stand Adaptability 119	
	i. Optimal Client Position 119	
	a. BWST Operator 120	
	b. Hip Trainer 120	
	c. Leg Trainers 120	
	d. Assessment 120	
	iii. Scoring 121	
	Step Retraining 123	
	i. Optimal Client Position 123	
	ii. Trainer Instructions 124	
	a. BWST Operator 124	
	b. Hip Trainer 124	
	c. Leg Trainers 125	
	d. Assessment 125	
	iii. Scoring 125	
	Step Adaptability 127	
	a. BWST Operator 128	
	1	
	c. Leg Trainers 129	
	d. Assessment 129	
	iii. Scoring 130	
Ab	ilities During Overground Assessment	133
A.	Sit 133	
	i. Optimal Client Position 133	
	ii. Trainer Instructions 133	
	iii. Scoring 133	
B.	Reverse Sit-Up 136	
	i. Optimal Client Position 136	
	ii. Trainer Instructions 136	
	iii. Scoring 137	
C.	Sit-Up 139	
	i. Optimal Client Position 139	
	ii. Trainer Instructions 139	
	iii. Scoring 139	
D.	Trunk Extension in Sitting 141	
	i. Optimal Client Position 141	
	- Prince Continue 111	

III.

	<ul><li>ii. Trainer Instructions 143</li><li>iii. Scoring 143</li></ul>	
	E. Sit to Stand 144	
	i. Optimal Client Position 144	
	ii. Trainer Instructions 146	
	iii. Scoring 146	
	F. Stand 147	
	i. Optimal Client Position 147	
	ii. Trainer Instructions 147	
	iii. Scoring 148	
	G. Walking 150	
	i. Optimal Client Position 150	
	ii. Trainer Instructions 150	
	iii. Scoring 151	
IV.	Overview of Utilization of Phases of Recovery for Progression 154	
V.	Appendix A 154	
	A. Phase Scoring Sheet 154	
VI.	Appendix B 155	
	A. Phase Sheet Cards 155	
Chapte	er 8 Progression to Recovery	160
I.	Four Areas of Progress 161	
	A. Endurance 162	
	B. Speed 162	
	C. Load 162	
	D. Independence 163	
II.	Progression by Phase of Recovery and Locomotor Training Component 163	
	A. Phase 1 Progression 163	
	i. Step Training 164	
	ii. Overground Assessment 164	
	iii. Community Integration 166	
	B. Phase 2 Progression 166	
	i. Step Training 167	
	ii. Overground Assessment 167	
	iii. Community Integration 170	
	C. Phase 3 Progression 171	
	i. Step Training 173	
	ii. Overground Assessment 173	
	iii. Community Integration 173	
	D. Phase 4 Progression 177	
	i. Step Training 178	
	ii. Overground Assessment 178	
	iii. Community Integration 178	
III.	Overall Summary 179	
	Index	183
	much	100

Contents