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Thera Era Presents:

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UNDERSTANDING THE PEDIATRIC FOOT WITH IMPLICATIONS FOR CHILDREN WITH CEREBRAL PALSY AND HYPOTONIA

This is a reorganization of the pre-casting program that Billi teaches in Telluride, CO. We're bringing her to you

April 29, 2018

Day 1: Lecture 1 (*see program schedule below*)

April 30, 2018

Day 2: Lab 1 Foot & Ankle Assessments *for a limited number of alumni of Day 1 lecture*

May 6, 2018

Day 3: Lecture 2 (*for alumni of lecture 1 only*)

May 7, 2018

Day 4: Lab 2- Posting Trials and case presentation- **for the same alumni of Part 1 lecture and lab who attend the part 2 lecture.*

Part 1: Lecture / Lab 1 Course Description

The content covered in this program is centered primarily on problems of equinus-related foot deformity in diplegic cerebral palsy (CP) with a subtext of the hypotonic, pronated foot, and includes the following topics:

- A review of functional foot and ankle anatomy and biomechanics Characteristics of and factors contributing to healthy foot development.
- Aspects of gait development and kinematics that support orthotic design principles for children with diplegic CP.
- A review of ankle and foot musculoskeletal assessment procedures. A discussion of normal developmental ankle muscle extensibility and physiology of the length-tension relationship.
- The implementation of ankle range of motion findings in orthotic selection and design, featuring Elaine Owen's Tuned AFO/Footwear Combinations, Mary Weck's weight-line training orthoses, Phoenix Habilitation Technology's Gait Control Orthosis, The R-Wrap AFO, and SureStep's Pull-Over.

A discussion of limb length discrepancy features pathomechanics, a new approach to assessment, and orthotic adaptations. Instructor discusses the role that soft-tissue extensibility and the Selective Control Assessment of The Lower Extremity (SCALE) findings can play in documenting the effects of assorted therapeutic and orthotic intervention strategies. This program is preliminary to Part 2 in which this information is applied to posting strategies for Refund, and Cancellation policies: All cancellations must be received 1 month prior to course to receive full compensation. Any cancellations within 1 month of the course will not be refunded.

optimizing specific foot segment alignment and to orthotic management planning for videotaped cases.

Part 2: Lecture 2 / Lab Course Description

The content covered in this program is centered primarily on problems of equinus-related foot deformity in diplegic cerebral palsy (CP) with a subtext of the hypotonic, pronated foot. Instructor opens with a brief review of relevant principles of Sahrman's Movement Systems Analysis as they apply to deformity management. Participants then consider the potential effects of a variety of cast and orthotic designs in the context of two hypothetical cases of diplegic CP. The orthotic selection process is organized to consider key concerns regarding postural control acquisition and movement strategy change with stance-phase tibial inclination rate in mind.

Participants identify and describe common developmental foot deformities in terms of plane-based components as considerations for orthotic design features, and instructor discusses serial casting as a component of equinus deformity management using tuned ankle-foot orthosis-footwear combination (AFO-FC) systems. A review of common pathomechanical features of foot alignment, such as subtalar and forefoot varus and forefoot valgus, provides the context for modifying the floor of an orthosis to optimize foot function, foot loading, and postural control.

The program ends with a videotaped case presentation that demonstrates the use of assessment findings and postural assessment in standing and walking to select an orthosis and undertake a posting trial. In the ensuing workshop, participants consider a videotaped case with foot and ankle assessment findings to make an orthotic design choice that addresses desired load-bearing foot and limb joint alignment, magnitude of segment enclosure, degrees of freedom provided or restrained, and propose a posting plan.

Course Location: 40 Skyline Terrace Spring Valley, NY 10977

Dates: **Part 1:** April 29-30; **Part 2:** May 6-7 2018

Time: 8 am- 5 pm

Contact hours: 31.25 CEU's

Tuition:

Part 1, Lecture 1: \$275

Part 1: Lecture 1 + Lab 1 only: \$495

Part 1: Lecture 1 + Lab 1 when enrolled on Parts 1 & 2: \$395

Lecture 1 and Lecture 2: \$425

Part 2: Lecture 2 + Lab 2: *Open only to Part 1 attendees*: \$395

4 day course: \$890

Target Audience: Pediatric Physical Therapists and Physical Therapy Assistants

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Learning Objectives of the Course:

Course Objectives Lecture 1

Participants completing this program are expected to be able to:

- Explain the anatomical influence of calcaneal alignment and motion on weight-bearing foot alignment and function.
- Describe first ray components, function, and operating mechanisms in the load-bearing foot
- Discuss the developmental changes in weight distribution through the foot in standing position.
- Discuss the role of postural control in foot development.
- Describe the stance phase rockers.
- Define gait *kinematics* and *kinetics*.
- Discuss the variance in tibial and femoral inclination rates during the stance phase of gait in the toddler and after age 3 years.
- Explain the contributions of the triceps surae muscles to gait kinematics and kinetics.
- Describe normal developmental changes in ankle DFROM as measured in prone with foot joints congruent.
- Discuss the physiology and functional significance of normal and pathologic R1 (first-catch) and the modulus of stiffness to R2 (maximum) end ranges of DFROM.
- Explain the physiologic and structural changes that are known to occur in chronically over-recruited muscle and surrounding tissues following a history of recruitment for maintenance of verticality.
- Define *relative hypermobility* and give 3 examples in equine deformity.
- Discuss orthotic posting for equine deformity and limb length discrepancy.

Course Objectives Lecture 2

Participants completing the *seminar portion* of this course are expected to be able to:

- Define *relative hypermobility* and give 3 examples in equine deformity.
- Define muscle *dominance* vs. muscle *strength* in the presence of a muscle force couple imbalance.
- Discuss the proposed reordering of common interventions for equinus deformity in children with diplegic CP according to S.A. Sahrmann's approach to Movement Systems Analysis.
- Discuss weight line training in foot and ankle deformity management re proprioception and muscle recruitment strategies used for postural control.
- Identify the deformities of the foot and ankle that occur most commonly in children or adults with CNS upper neuromotor dysfunction, and describe the components of illustrated deformities at each joint in plane-based terms.
- Explain the clinical rationale for using specific assessment techniques to identify features of soft tissue extensibility, joint mobility, and structural alignment in the ankle and foot.

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- Describe these pathomechanical features of foot joint alignment: subtalar varus, forefoot varus, forefoot valgus, metatarsus adductus, forefoot adductus, cavus, cavovarus, Morton's foot type, hallux limitus.
- Describe orthotic posting and discuss posting objectives for the pathomechanical features of foot alignment.
- In the context of presented videotaped cases, determine whether a deformity meets the criteria for intervention with a foot orthosis, a tuned AFOFC, or serial casting, and design a posting plan for one case.

Participants completing the **lab sessions** of this course are expected to be able to:

- Demonstrate novice skill level in musculoskeletal assessment procedures of the ankle and foot in the open and closed chains.
- Bring the principles of orthotic posting to the findings obtained in assessment lab, and formulate an orthotic design plan.
- Demonstrate novice skill in undertaking an informed, targeted, temporary and exploratory posting trial.
- Execute at least one assessment procedure with a child volunteer during the case presentation, and explain the clinical relevance of the finding.

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Program Schedule – Note the early start times for seminar days.

The course will proceed on the assumption that assigned pre-course materials have been reviewed in full.

PART 1 – DAY 1 - SEMINAR (APRIL 29)

Start	DESCRIPTION	Contact Hours
7:45	Arrive, sign in, settle in	00
8:00	Review of Functional Anatomy & Closed-Chain Function of the Subtalar & Midtarsal Joints Using Plane-Based Terminology	1.25
9:15	Standing Lab	.25
9:30	Short Break – 15 min.	00
9:45	Contributions of Early Functioning Alignment to Foot & Ankle Development and Function	.50
10:15	Kinematics Feed Kinetics – Ideal Ankle & Foot Function in Gait	.75
11:15	Bringing Movement Systems Analysis to Pediatric Foot Deformity Management	.75
12:00	Lunch – 30 min	00
12:30	Review of Planar Motions and Deviations in the Foot	.25
12:45	Name That Foot Deformity! Review of Pre-course Reading	.50
1:15	Development and Assessment of Ankle DFROM – R1 & R2	.75
2:00	Short Break – no food... 15 min	00
2:15	Foot Assessments Overview – Open Chain	1.00
3:15	Limb Length Assessment and Posting Strategies	.50
3:45	Short Break – 15 min	00
4:00	Foot Assessment Procedures – Closed Chain	.75
4:45	Questions & Discussion	.25
5:00	Adjourn	Day 1 didactic contact hours: 7.00

PART 1 - DAY 2 – LAB (APRIL 30)

LAB PARTICIPANTS, BRING LAB CLOTHES – WE NEED TO SEE KNEES.

Start	DESCRIPTION	Contact Hours
8:15	Sign in and settle in. <i>No formal breaks during lab. Graze at will.</i>	00
8:30	LAB: Open-Chain Assessments - Land-marking and assessing the congruent foot	2.00
10:30	LAB: Open-Chain Assessments – Ankle and foot joint ROM, limb lengths, Morton’s	2.00
12:30	Lunch – 30 min	00
1:00	LAB: Closed-Chain Foot Assessment Procedures	.75
1:45	LAB: Repeat Open and Closed-Chain Assessments with a New Partner	1.75
3:30	LAB with Typically Developing Children – 1 child per 3 participants	2:00
5:30	Adjourn – Practice these assessments with a child this week	
	Lab contact hours:	8.50
	Total didactic hours (Part 1):	15.25
	Total contact hours for Parts 1 & 2:	23.50

HOMEWORK – Before May 6, read *Features of the Typically Developing Foot*

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PART 2 - DAY 1 – SEMINAR (MAY 6)

Start	DESCRIPTION	Contact Hours
7:45	Arrive, sign in, settle in	00
8:00	Review of Planar Motions and Structural Deviations in the Foot	.25
8:15	Review of Homework: Features of Typical Foot Development	.50
8:45	Trunk-Based Foot Deformity Development and Management in Diplegic CP	.50
9:15	Short Break - 15 min	00
9:30	Sagittal Plane Posting: Principles & Strategies	1.00
10:30	Foot Pathomechanics and Posting Strategies to Optimize Alignment and Function	1:00
11:30	Videotaped Case Presentation	.75
12:15	Lunch – 45 min	00
1:00	Workshop: Goal-Based Review of Orthotic Options	1.00
2:00	Short Break – 15 min.	00
2:15	Workshop: Processing Ankle and Foot Assessment Findings to Plan Targeted Orthotic Design and Posting Modifications for a Recorded Case	1.50
4:00	Review workshop cases	1.25
5:15	Questions & Discussion	.25
5:30	Didactic only attendees please exchange evals for completion certificates.	
	Today's didactic contact hours:	8.00
	Total didactic contact hours:	15.00

PART 2 - DAY 2 - LAB (MAY 7)

LAB PARTICIPANTS, BRING LAB CLOTHES – WE NEED TO SEE KNEES & SHOES WITH REMOVABLE INSOLES.

Start	DESCRIPTION	Contact Hours
8:15	Sign in and settle in.	00
8:30	Undertake a Full Open and Closed-Chain Foot Assessment with a New Partner	1.00
9:30	DEMONSTRATION: Using Assessment Findings to Plan and Try Posting	.75
10:15	Short Break – 15 min	00
10:30	LAB: Using Assessment Findings to Generate a Posting Plan and Trial for 1 Foot	1.50
12:00	Lunch – 45 min	00
12:45	LAB: Measure Ankle DFROM- KE and -KF on 2 Participants	1.25
2:00	LAB: Using Assessment Findings to Generate a Posting Plan and Trial for 1 Foot	1.25
3:15	Short Break – 15 min. – Set up for case presentation	00
3:30	Case Presentation with an agreeable, ambulatory child with diplegic or hemiplegic CP	2:00
5:30	Exchange Evaluations for completion certificates and adjourn	00
	Today's Lab contact hours:	7.75
	Total didactic hours (Parts 1 & 2):	15.00
	Total Lab Hours (Parts 1 & 2):	16.25
	Total contact hours for Parts 1 & 2:	31.25

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