

Sparking Change in the Treatment of Children with Diplegic Cerebral Palsy



In children born premature and those with diplegic cerebral palsy (CP), findings obtained with diffusion tensor imaging

(DTI) have brought significant challenges to the common definition of CP as “a motor disorder caused by a static lesion to the upper motor neurons resulting in spasticity”.

Beverly Cusick, PT, MS, NDT, COF, discusses findings by researchers that challenge the common notion that spasticity is present, that it causes contractures and gait pathology in children with diplegia, and that treating spasticity is safe and effective in the long run. She brings clarity and new insights to a review of the characteristics of muscle tone and proposes several evidence-based alternatives to “spasticity-reducing” interventions that do no harm.

Susan Hastings, PT, DPT, PCS, discusses requirements for motor learning to occur, the state of the literature on the use of electrical stimulation for children with CP, and embeds her experience and exciting new discoveries using postural control training, serial casting, modified AFOs, transcutaneous spinal and regular electrical stimulation and whole body vibration as treatment- and motor-learning-augmenting interventions in the context of an enlightening series of videotapes of a child with diplegic CP spanning 12 years.

Registrant Information

Course Registration Options <i>(indicate preference)</i>	Price
2-day didactic	\$300
2-day didactic + 1-day Cusick lab (maximum of 6 observers (a.k.a. auditors))	\$350
2-day didactic + 1-day Cusick lab (limited enrollment)	\$450
2-day didactic + 2-day Hastings lab (limited enrollment)	\$550
2-day didactic + 3-day Cusick/Hastings labs	\$700

**Full refund if written cancellation is received prior to May 14, 2019*

Name: _____

Organization: _____

Address: _____

Email: _____

Phone: _____

Discipline: _____

**Please make checks payable to
CCS Therapy Foundation**
(Credit cards not accepted)

Mail to: Louise Sumpter
1125 Buchanan Dr
Santa Clara, CA 95051

Sparking Change in the Treatment of Children with Diplegic Cerebral Palsy

*Sponsored by the
CCS Therapy Foundation*

**Beverly Cusick, PT, MS, NDT,
COF/BOC**

Susan Hastings, PT, DPT, PCS

June 14-18, 2019

Course offerings:

2-day didactic – Cusick/Hastings
(1.425 CEUs)

2-day didactic/1-day lab – Cusick
(2.225 CEUs)

2-day didactic/2-day lab – Hastings
(3.05 CEUs)

2-day didactic/3-day lab – Cusick/Hastings
(3.85 CEUs)

Course Location:

Santa Clara County CCS
Chandler Tripp MTU
780 Thornton Ave
San Jose, CA 95128
408-793-5900

For a full course description and questions please contact Renee Cortise
408-793-5934

renee.cortise@phd.sccgov.org

Learning Objectives:

DIDACTIC (Day 1-2)

Sparking change in the treatment of children with diplegic CP:

- Discuss the proof of validity of JW Lance's definition of spasticity (1980).
- Discuss the evidence supporting the causative role of spasticity in deformity development and gait pathology.
- Discuss the evidence supporting the Modified Ashworth Scale as a valid test of spasticity.
- Explain diffusion tensor imaging (DTI) and discuss recent findings in children with diplegic CP.
- Describe R1 (L_1 , L_0) end range on the passive length-tension curve and discuss its developmental normalcy.
- Relate postural control to limb muscle recruitment and physiologic adaptation.
- Describe the muscle recruitment strategy needed to remain upright in the presence of a chronically anterior displacement of the body COM in standing and in walking. Relate this strategy to development of common soft tissue contractures in children with diplegic CP.
- Explain the relevance of EMG data in gait as evidence of spasticity.
- Discuss the evidence of long-term effects - on deformity, strength, postural control, and gait pathology - of treating "spasticity" in children with diplegic CP using Botulinum toxin-A injections and selective dorsal rhizotomy.
- Explain the rationale for building trunk and hip control of postural alignment and the body COM as a contracture prevention and management strategy.
- Discuss differences in muscle synergies in CP compared to typically developing children and their potential for change through myelination.
- Differentiate between short- and long-term motor learning in children with diplegia.
- Relate the principles of motor control and how these are affected through use of FES and WBV
- Discuss and compare the evidence in the pediatric literature on NMES/FES
- Name at least 2 pediatric studies that support the use of WBV in the literature
- Discuss rationale for choosing FES and WBV equipment and techniques in children, compared to adults.
- Describe one novel application of FES to augment pediatric outcomes.

- List 2 ways to incorporate FES into a therapeutic exercise program, as well as in other interventions (serial casting, bracing, treadmill training).

LAB

Bringing orthopedic assessment findings to management planning (Cusick – Day 3):

- Demonstrate novice-level skill in executing 10 postural and lower-extremity musculoskeletal assessment procedures.
- Execute at least one assessment procedure with the child volunteer and explain the implications and relevance of the finding.
- Sort reported assessment findings into orthopedic categories and use them to generate a targeted and prioritized list of live-in management strategies for massed practice between therapy sessions.
- Explain the goals of any strategy trials undertaken with the child volunteer.

Functional e-stim for the child with CP (Hastings – Day 4-5):

- Describe the different forms and techniques of electrical stimulation used in the clinic.
- Explain the differences in equipment and technique used for using FES in the pediatric population as compared to adults.
- State 3 indications, precautions, and contraindications of NMES/FES.
- Demonstrate novice skill level in programming the electrical stimulation unit
- Explain the uses for different parameters/settings in electrical stimulation.
- Demonstrate novice skill level in choosing electrodes and their placement for treatment when using FES, using single or multiple units.
- Apply 1-2 new application of electrical stimulation and give rationale as to why each works
- Choose appropriate parameters for using Whole Body Vibration therapy.
- Demonstrate 2 positions on the vibration plate, and state why to use each in treatment of children with CP
- Explain reasoning for keeping the COM back when using FES and WBV throughout the treatment session
- Describe differences in treatment using FES vs WBV

Course Didactic Schedule:

Day 1: (6.75 didactic contact hours)

8:15	Sign in
8:30	Tone in LEs: Developmental changes
9:00	Development of postural control influencing LE function
9:45	Break
10:15	Postural control/sensory processing influencing LE function
11:00	Human muscle hypertonus
11:30	Spasticity in Diplegic CP
12:00	Lunch
1:00	Spasticity in Diplegic CP, continued
1:45	Spasticity treatments
2:15	Break
2:30	Movement systems analysis for diplegic CP
3:15	Strategies for building fundamental skills in body weight management
4:00	Break
4:15	Principles applied
5:00	Questions & Discussion
5:15	Adjourn

Day 2: (7.5 didactic contact hours)

8:00	Sign in
8:15	Intro
8:45	Can motor pattern be changed?
9:45	Break
10:00	Case presentation
11:00	Using e-stim with children with CP
12:00	Lunch
1:00	Whole body vibration (WBV)
2:00	Break
2:15	Using FES, NMES, and WBV in cast presentation
3:30	Break
3:45	New applications of FES in CP
4:45	Know what to expect during growth
5:15	Discussion & questions
5:30	Course Evaluation/Adjourn

Course Lab Schedule:

Day 3: (1 didactic/7 lab contact hours):

8:00	Sign in
8:15	LAB: LE Assessment Procedures
12:00	Lunch
1:00	LAB: Live Case Presentation
3:30	Break
3:45	Workshop: Treatment planning
4:45	LAB: Implementing treatments
5:30	Course Evaluation/Adjourn

Day 4: (2.5 didactic/5.75 lab contact hours)

8:00	Sign in
8:15	Intro to NMES/FES
9:45	Walk aides and wearables
10:00	Break
10:15	Myofascial force transmission
11:00	LAB: Whole body vibration
12:00	Lunch
1:00	LAB: NMES/FFES parameters
3:00	Break
3:15	LAB: FES continued
5:00	Adjourn

Day 5: (0.5 didactic/7.5 lab contact hours)

8:00	Sign in
8:15	PRACTICUM I: Tx of child GMFCS I-III
10:15	Break
10:30	Tx presentations
11:30	Lunch
12:30	PRACTICUM II: Tx of trunk & UE
1:30	Tx presentations
2:15	PRACTICUM III: Tx of child GMFCS IV-V
3:45	Tx presentations
4:30	Tips/discussion/questions
5:00	Course Evaluation/Adjourn