Pediatric Gait Analysis and Orthotic Management
With Ankle-Foot Orthosis-Footwear Combinations (AFO-FC)
A Segmental Kinematic Approach 3 day Course

Presented by:
Elaine Owens MSc, SRP MCSP, Cliical Specialist Pediatric Physical Therapy

February 18-20, 2018

Texas Children's Hospital Woodlands
www.texaschildrenshospital.org/pmr

Texas Children's Health Center
Texas Children's West Campus
Texas Children's Main Campus

Course Location:

Texas Children's Hospital - The Woodlands
17600 Interstate 45 South
The Woodlands, TX 77384
2nd floor conference room

www.texaschildrens.org/pmr

Course Description:

The course is intended primarily for paediatric physiotherapists, orthotists and other professionals working in the field of paediatric gait rehabilitation. It is also highly relevant to physiotherapists, orthotists and others working in the fields of adult neurology and adult learning disability.

The course explores a fresh approach to the observation and analysis of normal walking and standing, and the classification and management of gait disorders. The biomechanics of normal walking and standing, and the pathological gaits of disabling conditions will be extensively reviewed, with particular reference to orthotic management. Pre-gait analysis and orthotic management assessment will be demonstrated. The emphasis of patient cases will focus on cerebral palsy, myelomeningocoele and other neurological conditions. Participants will gain knowledge of the aims of orthotic management and how to achieve them through: the biomechanics of ankle-foot orthoses, the influence of footwear, varieties of AFO Footwear Combination design, tuning AFO Footwear Combinations to optimise gait and extensive video examples. In addition live patient demonstrations will help participants refine their clinical decision making skills involved in gait analysis and orthotic design.

Each delegate will receive an illustrated course manual, which includes extensive reference lists and directions for further reading, and a CD containing additional information and proformas.

Objectives:

At the end of this course, participants will be able to:

Describe kinematic analysis of standing, stepping and the divisions of the normal gait cycle, with equal emphasis on movements of the joints and movements of segments relative to the vertical.

Describe kinetic analysis of standing, stepping and the divisions of the normal gait cycle and the interaction of kinematics with kinetics

Describe and discuss the kinematics and kinetics of pathological standing and gaits, gait deviations at segments and joints and categorization of pathological gaits by segment deviation.

Demonstrate clinical assessment prior to gait analysis and orthotic provision; including joint ranges, bony torsions, muscle lengths, strengths and tone.

Distinguish the assessments required to decide on the optimum sagittal angle of the ankle in an AFO and demonstrate the use of a clinical algorithm.

Distinguish the assessments required to determine suitability for a dorsiflexion free AFO and demonstrate the use of a clinical algorithm.

Distinguish and discuss the biomechanics of a wide variety of AFO and footwear design.

Use a clinical algorithm, based on categorization of pathological gait by segment deviation in order to facilitate decision making for optimal design of 'AFO footwear combinations' for a variety of gait disorders.

Discuss kinematic and kinetic principles of designing, aligning and tuning 'AFO footwear combinations' through gait analysis, in order to optimize their effect at segments and joints in each of the divisions of the gait cycle.

Perform kinematic and kinetic tuning of 'AFO footwear combinations' using slow motion video analysis or combined kinematic and kinetic gait analysis.

Schedule

DAY 1

SESSION 1 AM
8:30 am – 12:00 noon – one 15 minute break
Normal standing and walking

- Defining the alignments and movements of segments and joints in three planes
- Defining standing, stepping and walking with full gait cycles
- Phases, subdivisions and temporal events of the gait cycle
- Kinematics of segments and joints in standing, stepping and each division of the gait cycle

12:00-1:00 LUNCH

1:00-2:00

SESSION 2 PM
Normal standing and walking

- Kinetics; forces, moments and powers
- Kinetics of the divisions of the gait cycle, stepping and standing
- Interaction of segment kinematics, joint kinematics and kinetics

2:00-3:00 PM

SESSION 3
Normal standing and walking
Muscle actions in the divisions of the gait cycle

Review of clinical assessments for gait analysis and orthotic management

3:15-5:15 PM

SESSION 4 PM
Clinical assessments for determining the sagittal Angle of the Ankle in the AFO
Clinical algorithm to determine optimum Ankle Angle alignment in an AFO

5:15-5:30 Questions and Answers

DAY 2

8:30-12:00 1 15 minute break
SESSION 1 & 2 AM
Muscle length, strength, stiffness and plasticity

Orthotic management with Ankle-Foot Orthosis Footwear Combinations (AFOFCs)
Aims of orthotic management, an ICF approach
Influence of segment proportion in AFOFC design
Biomechanics of ankle-foot orthosis designs
Biomechanics of footwear designs worn with AFOs
Biomechanics of a variety of AFOFC designs and their applications
Kinematics and kinetics of gait disorders
Categorization of gait disorders by segment deviation, emphasis on Cerebral Palsy, myelomeningocele and neurological conditions
Clinical algorithm for dorsiflexion free AFOFCs
Clinical algorithm for designing, aligning and tuning AFOFCs for each category of gait
Tuning AFOFCs to optimize their performance in standing, stepping and gait
Guidelines for optimal alignments, proportions and profiles

12:00-1:00 LUNCH

1:00-5:30 with one 15 minute break

SESSION 3 & 4 PM
Video demonstrations of a variety of gait disorders, orthotic management and tuning by video vector generator gait laboratory, including group work to determine optimal prescriptions.

DAY 3

8:00-12:00

Patient demonstrations using video vector gait laboratory or video camera

About The Instructor:

Elaine OWEN MBE MSc SRP MCSP has been practicing since 1974. She has won a number of awards for her work, including an MBE in the Queens New Year's Honors list 2013, for Services to Children with Disability, following nomination by colleagues and parents. She has postgraduate qualifications in Lower Limb Orthotic Biomechanics and Clinical Gait Analysis, from the University of Strathclyde and an MSc in Rehabilitation Studies, which included a thesis about orthotic management of neurological conditions, normal gait and standing. She has undertaken the basic and advanced Gait Analysis Instructional Course of the European Society of Movement Analysis of Adults and Children (ESMAC); adult and pediatric Bobath (NDT) training and she has also trained at The Institute for Conductive Education in Budapest. She takes an eclectic view of the management of neurological disabilities but with an emphasis on a biomechanical approach to rehabilitation. From 1983 until 2015, as well as practicing clinically, she was also Head of Pediatric Physiotherapy for North West Wales, but now concentrates solely on clinical work and lecturing.

For nearly 20 years Elaine has used a video vector gait laboratory for gait analysis, and orthotic and physiotherapy management of children and adults. She is regularly invited to teach her course and lecture in both the UK and internationally. The course, intended for physiotherapists, orthotists, doctors and other rehabilitation professionals, explores a fresh approach to the observation and analysis of normal standing, stepping and walking with full gait cycles and the management of gait disorders. It introduces a segmental kinematic approach to rehabilitation and gait analysis, as well as a logical and comprehensive system for designing, aligning and tuning orthoses and footwear. While these principles have been developed from mainly pediatric experience they are equally applicable to working with adults.

Elaine has presented at many conferences including Instructional Courses at the American Academy for Cerebral Palsy and Developmental Medicine 2010, 2011, 2012, 2013, 2015; Symposia at The International Society for Prosthetics and Orthotics Triennial World Congress 2004, 2007, 2010, 2013 and 2015. She has also presented at the European Society for Movement Analysis in Adults and Children Annual Meetings 2002, 2004, 2005, 2009, 2014 and the American Academy of Orthotists Prosthetists 2014, 2015, 2016.

She has recently contributed two chapters to the recent publication 'Physical Therapy for Children with Cerebral Palsy; An Evidence Based Approach' and co-authored a chapter for the American Academy of Orthopedic Surgeons, Atlas of Orthotics and Assistive Devices 4th Edition, 2008. A chapter on orthoses for children with Spina Bifida has also been completed.

As well as the award in 2013 of an MBE, in 2011 she received a Welsh Government Recognizing Achievement Award and in 2008 the ISPO UK George Murdoch Prize for her submission 'The importance of being earnest about shank and thigh kinematics especially when using AFOs'.

Pediatric Kinematic;: Please include check or credit card # with registration form and mail or fax to: Texas Children's Hospital Physical Medicine & Rehab, 1919 S Braeswood M06273 , Houston, Texas 77030 Attn: Mitzi Wiggin.

Course Fee: $400.00

Course Location:

Texas Children's Hospital – The Woodlands
17600 I-45 South
The Woodlands, TX 77384
Conference Room A, 2nd floor

19 CCU's have been applied for through TPTA.

Hotel Accommodations: **Candlewood Suites**
17525 St. Luke's Way
Spring, TX 77384
Hotel Contact: Richard
936-271-2100
Rate: $85.00

Website Registration: www.texaschildrens.org/pmr

Contact: Angela Dumas or Dora Delgado-Torres at 832-826-6311 or e-mail at courseregistration@texaschildrens.org

Registration form