Pediatric Gait Analysis and Orthotic Management: An Optimal Segment Kinematics and Alignment Approach to Rehabilitation (OSKAR)

4 Day Online Course:
November 6, November 20, December 4 and December 12, 2020

Advanced Pediatric Gait Analysis
1 Day Online Course (choose session):

January 9th, 2021
or
April 23rd, 2021

Shirley Ryan AbilityLab
355 East Erie Street
Chicago, IL 60611
COURSE DESCRIPTION

This live online course explores a fresh approach to the observation and analysis of typical and atypical patterns of standing, stepping and walking with full gait cycles. The kinematics and kinetics of standing and walking and the atypical gait patterns of disabling conditions will be reviewed, with particular reference to orthotic management and rehabilitation programs. The emphasis of patient cases will focus on cerebral palsy, myelomeningocele and other neurological conditions. Participants will review the short and long term goals of orthotic management, in all areas of the ICF, and how to achieve them through: the biomechanics of ankle foot orthoses, the influence of footwear, varieties of “AFO footwear combinations”, use of clinical algorithms to design, align and tune “AFO footwear combinations” in order to optimize standing and walking for the variety of gait patterns, and also the OSKAR rehabilitation programs that may accompany orthotic provision including functional gait training and motor learning programs with orthoses and footwear. Video vector gait laboratory examples and patient discussions in small and large groups will help participants refine their clinical decision-making skills in gait analysis and orthosis design and alignment. Day 4 of the course will consist of either live or pre-recorded video cases depending on the safety requirements in place in December. Upon completion of the course, participants will be able to apply the principles directly into their working practice. A comprehensive manual accompanies the course.

Successful completion:
Participants will complete 6 hours of self study activities in advance of this four day course (earning 25.5 contact hours + 6.0 contact hours= 31.5) These self study activities for the course will consist of readings, a 60 minute on-demand webinar and an exercise to better understand terminology and definitions necessary to the fundamentals of the course. Participants will fill out an assessment of this material prior to the live course. During the live portion of the course, participants must record their attendance and complete an online evaluation.

Review the 60 minute On-Demand Module on Pediatric Gait: Optimal Segmental Kinematics and Alignment Approach to Understanding

WHO SHOULD ATTEND

Orthotists, Orthotic Assistants, Orthotic Technicians, Orthotic Fitters, Pedorthists, Pediatric Physical Therapists and Physical Therapist Assistants and Physicians (not offering CME). Physical Therapists working in adult neurology or adult learning disability and other professionals working in pediatrics have also found the content relevant and valuable.

COURSE OBJECTIVES

Upon completion of this course, participants will be able to:

- **Describe** kinematic analysis of the divisions of the gait cycle with equal emphasis on movements of the joints and movements of the segments relative to the vertical and horizontal
- **Review** kinetic analysis of the divisions of the gait cycle and the interaction of kinematics with kinetics
- **Describe** the kinematics, kinetics and muscle actions of typical standing, stepping and full gait cycles
• **Describe** and **Discuss** the kinematics and kinetics of atypical gait patterns, deviations at segments and joints and categorization by segment deviation
• **Distinguish** the assessments required to determine the optimum alignment of the sagittal angle of the ankle in an AFO and demonstrate use of a clinical algorithm
• **Distinguish** and **Discuss** the biomechanics of a variety of AFO and footwear designs and the alignment, refinement and tuning of these designs to optimize gait
• **Demonstrate** use of a clinical algorithm for designing, aligning and tuning AFO Footwear Combinations to determine optimum prescriptions for each gait pattern
• **Demonstrate** use of a clinical algorithm for determining whether a dorsiflexion free AFO design is appropriate
• **Demonstrate** use of a clinical algorithm for determining MTPJ free or MTPJ fixed AFO design
• **Integrate** alignment and tuning concepts with patient case examples
• **Demonstrate** static and dynamic alignment of AFO Footwear Combinations
• **Discuss** the relevance of segment proportion to orthotic prescriptions
• **Describe** the essential concepts of the Optimal Segmental Kinematics and Alignment approach to Rehabilitation (OSKAR)
• **Describe** OSKAR functional gait training and motor learning programs for standing and walking with AFO Footwear Combinations
• **Demonstrate** essential lower limb clinical assessments for gait analysis
• **Demonstrate** use of digital video to perform sagittal and coronal gait analysis

**COURSE FACULTY**

*Elaine Owen, MBE, MSc, SRP, MCSP*

Elaine Owen has been practicing as a physical therapist since the 1970s and specializes in pediatrics and adult neurology. She has postgraduate qualifications in Lower Limb Orthotic Biomechanics (University of Strathclyde) and Clinical Gait Analysis (University of Strathclyde). She has an MSc in Rehabilitation Studies, which included a thesis about orthotic management of neurological conditions, normal standing and gait. She is ESMAC trained in Clinical Gait Analysis. For over 20 years she has used a video vector gait laboratory for gait analysis, and orthotic and physical therapy management of children and adults, at Bangor Child Development Centre, UK and other locations. She has regularly been invited to teach her course and lecture internationally. As well as through her own courses these principles have been presented at the International Society for Prosthetics and Orthotics (ISPO) Triennial World Congress, American Academy for Cerebral Palsy and Developmental Medicine (AACPDM), American Academy of Orthotists and Prosthetists (AAOP) and the European Society of Movement Analysis of Adults and Children (ESMAC). She has received a UK national award (MBE) for services to children with disability and in 2019 AAOP awarded her the Clinical Creativity Award.
AGENDA

Friday, November 6, 2020: Day 1

7:50  Welcome and Opening Remarks
Melissa Kolski, PT, DPT, OCS, Dip MDT
Education Program Manager

Entire course facilitated by Elaine Owen, MBE, MSc, SRP, MCSP

8:00  Review of Normal Gait and an Optimal Segmental Kinematics and Alignment Approach to Rehabilitation
Segment and Joint Alignment
Segment Proportion

10:30 Break

11:00 Normal Standing and Walking Kinematics, Segment and Joints
Normal Standing and Walking Kinematics, Kinetics and Interactions

12:30PM Lunch

1:30  Normal Gait Muscle Actions
Development of Walking

3:00  End of Day 1

Friday, November 20, 2020: Day 2

8:00  Discussion Musculotendinous Units - Properties and Adaptation (Pre-Reading)

9:45 Break

10:15 Clinical Assessment

12:30 PM Lunch

1:30  Aims and Goals for Orthotic Interventions: an ICF Approach
Principles of an Optimal Segmental Kinematics and Alignment Approach to Rehabilitation (OSKAR)
Biomechanics of Ankle-Foot Orthoses and Footwear
Influence of Footwear and Footwear Adaptions to standing, stepping and walking with full gait cycles

3:00 Break

3:30 Clinical Algorithm for Determining Suitability for Dorsiflexion Free AFOs
Friday, December 4, 2020: Day 3

8:00  Clinical Algorithm for Designing, Aligning and Tuning AFOs & Footwear
clinical algorithm for determining the sagittal angle of the ankle in an AFO
Categorization of Gait Patterns, based on Shank Kinematics

10:00 Break

10:30 Clinical Algorithm for determining MTPJ free or fixed AFO design
Guidelines for Shank to Vertical Angle Static Alignments for each gait category
Guidelines for Optimizing Heel and Sole Designs
Guidelines for Optimizing Rocker Sole Designs for each gait category, type and position

12:30 PM Lunch

1:30  Case Studies; Group Work
Video Vector Gait Laboratory Demonstrations of Atypical Gait Patterns and Optimal
Orthotic Management, Common Case presentations of each gait category

3:00 Break

3:30 Video Vector Demonstrations, Case Studies and Group Work *continued*

4:30 End of Day 3

Saturday, December 12, 2020: Day 4

8:00 Discussions of Day 4 Patients, in preparation of Day
Introduction to the Video Vector Gait Laboratory & Telehealth in the Pediatric population
Discussion of Clinical Assessment Cases 1 and 2

8:45 Patient 1
Clinical Assessment
Video Vector Gait Analysis
Tuning of AFO Footwear Combination using Video Vector, Group Work

10:00 Break

10:30 Patient Discussion

12:00 PM Lunch

1:00 Patient 2
Video Vector Gait Analysis
Tuning of AFO Footwear Combination using Video Vector, Group Work
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<tr>
<th>Time</th>
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<tr>
<td>2:45</td>
<td>Break</td>
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<td>3:15</td>
<td>Final Patient Discussion</td>
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<td>4:30</td>
<td>Debrief on the course</td>
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<td>5:00</td>
<td>Conclusion of Course Day 4</td>
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*PREREQUISITE: In order to attend this course, you must have attended a Pediatric Gait course facilitated by Elaine Owen, MSc, SRP, MCSP in the past.

COURSE DESCRIPTION

This live, online course is intended primarily for pediatric physical therapists and orthotists with a working knowledge of pediatric gait assessment. It will provide an in-depth analysis of “AFO footwear combination” design to optimize gait. Participants will have an opportunity to discuss videos and live patient demonstrations and the surrounding clinical decision-making skills involved in gait analysis and orthotic design. Elaine’s algorithms will be extensively reviewed through video examples and small/large discussion groups, building on the foundation laid in the introductory course. Upon completion of the course, participants will be able to apply the principles directly into their working practice.

Successful completion:
During the online portion of the course, participants must sign in for morning and afternoon sessions and complete an online evaluation.

COURSE OBJECTIVES

- **Identify, Distinguish and Discuss** the kinematics and kinetics of pathological gaits, gait deviations at segments and joints and categorization of pathological gaits by segment deviation.
- **Distinguish and Defend** the assessments required to determine the optimum sagittal angle of the ankle in an AFO.
- **Demonstrate** the use of a clinical algorithm to determine the optimum ankle angle in an AFO during patient case examples and live patient gait analyses.
- **Integrate** designing, aligning and tuning concepts and the use of an algorithm to determine optimum prescriptions for a variety of patient case examples
- **Demonstrate** use of an algorithm for designing, aligning and tuning AFO Footwear Combinations to determine the optimum prescriptions for patients during live gait analysis and tuning sessions.
- **Discuss and Defend** the essential concepts of the Optimal Segmental Kinematics and Alignment approach to Rehabilitation (OSKAR)
- **Describe, Discuss and Design** OSKAR functional gait training and motor learning programs for standing and walking with AFO Footwear Combinations

AGENDA FOR ADVANCED PEDIATRIC GAIT ANALYSIS

Two Dates Offered: January 9, 2021 or April 23, 2021

7:45AM Welcome and Opening Remarks
Melissa Kolski, PT, DPT, OCS, Dip MDT
Education Program Manager

8:00 Review Aims and Goals for Orthotic Interventions: an ICF Approach

9:00 Video Patient Demonstration, Child 1
Review of Clinical Assessment
Video Vector Gait Analysis
Goal Setting for Short, Medium and Long Term in all areas of ICF

10:00  Break

10:15  Determining Initial AFO Footwear Combination Prescription
Optimizing Initial AFO Footwear Combination using Video Vector Laboratory
Longitudinal Review of the Case over 3 years & Outcomes

12:00PM  Lunch

1:00  Video Patient Demonstration, Child 2
Review of Clinical Assessment
Video Vector Gait Analysis
Goal Setting for Short, Medium and Long Term in all areas of ICF

2:30  Break

2:45  Determining Initial AFO Footwear Combination Prescription
Optimizing Initial AFO Footwear Combination using Video Vector Laboratory
Longitudinal Review of the Case over 3 years & Outcomes
Final Discussion

4:00  Conclusion of the Advanced Course

LOCATION

The program will be held online.

Teaching modality/Delivery method
This course is taught virtually using an online video conference platform, the Academy Learning Portal, and other online learning materials.

TECHNOLOGY REQUIREMENTS
To participate, you will need access to a computer with an Internet connection. High-speed broadband access (LAN, Cable or DSL) is highly recommended.

- Internet connection: broadband wired or wireless (3G or 4G/LTE)
- Web browser: Windows: Internet Explorer 11+, Edge 12+, Firefox 27+, Chrome 30+
  - Mac: Safari 7+, Firefox 27+, Chrome 30+
  - Linux: Firefox 27+, Chrome 30+
- JavaScript and Cookies enabled
- Flash Player 9+
- Speaker or headset to listen to audio files and participate in Zoom calls
ACCESSIBILITY
Please contact the Academy if you require special accommodations for this course.

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<td>Pediatric Gait (31.5 Hours)</td>
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<td>Pediatric Gait (31.5 Hours) &amp; Advanced Pediatric Gait (6.5 Hours)</td>
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<tr>
<td>Advanced Pediatric Gait Only (6.5 Hours)</td>
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CANCELLATION POLICY

All cancellations must be in writing. Refunds less a 20% administrative charge will be given until December 3, 2020. The Academy reserves the right to cancel or change any programs for due cause. Cancellation of a program by the Academy will result in a full refund of tuition.

IMPORTANT REGISTRATION INFORMATION

Registrations will be taken in the order in which tuition checks or credit card information is received. We highly encourage you to register online as these are processed more quickly than mailed or faxed registrations. **Full Tuition must accompany the registration form in order to confirm a place in this course.** Until you receive your confirmation letter, you are not officially registered for the course. For online registrations, you will receive email confirmation on the day that you register. For registrations received by standard mail or fax, the confirmation may take up to 3 weeks after we receive your registrations. If you do not receive confirmation within this period, please call 312-238-6042.

One week prior to the course, only internet registrations and faxed registrations that include an email will be accepted. Please note that the course could reach its maximum enrollment before this time.
CONTINUING EDUCATION CREDIT

Physical Therapy
This course has been approved by the Illinois Physical Therapy Board for 31.5 Contact Hours (6.0 Hours Self-Study 25.5 Live). Approval #216-000069 Advanced course has been approved for an additional 6.5 contact hours.

The Shirley Ryan AbilityLab is recognized by the New York State Education Department’s State Board for Physical Therapy as an approved provider of physical therapy and physical therapist assistant continuing education. This four-day course has been approved for 31.5 Contact Hours (6.0 Hours Self-Study, 25.5 Live). Advanced course has been approved for an additional 6.5 contact hours.

The Illinois Early Intervention Training Program has approved for this event for 25.5 hours of EI credential credit in the area of 2.0 - Assessment, 2.0 - Atypical Development, 20.0 – Intervention, 1.5 - Typical Development

The Illinois Early Intervention Training Program has approved the Advanced course for 25.5 hours of EI credential credit in the area of 3.0 - Assessment, 1.0 - Atypical Development, 1.5 – Intervention, 1.0 - Typical Development

Orthotics
This program has approved for up to 31.5 credits through the American Board for Certification in O&P (ABC) for Orthotists, Orthotic Assistants, Orthotic Technicians, and Orthotic Fitters and Pedorthists. Full participation in this program is required to be eligible for the full amount of credits. Advanced course application for 6.5 credits.
### Course and Session Options:

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**Mail to:** Academy  
Shirley Ryan AbilityLab  
355 E. Erie Street, 12th floor, Suite 12-West  
Chicago, Illinois 60611

Please TYPE or PRINT your name and professional initials (MD, OT, PT, RN, etc.) as you would like them to appear on your continuing education certificate.

First Name _______________________________ Last Name _______________________________

Home Phone ( ) Prof. Initials _______________________

City ___________________________ State ___________ Zip ___________________________

Organization/Facility _____________________________________________

Work Address ____________________________________________

City ___________________________ State ___________ Zip ___________________________

Work Phone ( ) Fax ( )

Position ____________________________________________

E-mail (required) ____________________________________________

Please note: registration will not be processed without full payment.

**Method of Payment:** 
☐ Check enclosed (Payable to: Shirley Ryan AbilityLab)  
☐ Credit Card

**Credit Card Users Must Complete the Following Information:**

☐ MasterCard ☐ VISA ☐ American Express

Credit Card # ________________________________________________

Expiration Date __ / __ CVV ___ ___ (security code on back of card)

Name on Card ________________________________________________

Billing Address _____________________________________________

City ___________________________ State ___________ Zip ___________________________

Cardholder’s Signature _________________________________________

Credit card registrations may be mailed or faxed to: 312-238-4451.