



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

**Dec 12-14, 2019**  
Shirley Ryan AbilityLab  
355 East Erie Street  
Chicago, IL 60611

**Shirley Ryan**  
**Abilitylab**

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

The Academy is the not-for-profit, educational arm of the Shirley Ryan AbilityLab (formerly known as the Rehabilitation Institute of Chicago). Since 1953, the Academy has strived to advance the ability of healthcare professionals through our continuing education programs. Whether you are a seasoned veteran in the field of rehabilitation or a new graduate, our faculty are committed to helping you learn and apply the latest research and therapeutic approaches. We are excited that you share our passion for improving patient outcomes and hope you will continue to invest in your career by joining us for this program.

## COURSE DESCRIPTION

The course explores a fresh approach to the observation and analysis of normal and abnormal patterns of standing, stepping and walking with full gait cycles. The kinematics and kinetics of normal standing and walking and the abnormal 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 tuning “AFO footwear combinations” in order to optimize standing and walking for the variety of gait patterns, and also the rehabilitation programs that may accompany orthotic provision. 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. 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 5 hours of self study activities in advance of this three day course (earning 20.5 contact hours + 5.0 contact hours= 25.5) These self study activities for the course will consist of readings 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 on-site portion of the course, participants must sign in and complete an online evaluation.

## 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

- **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 and kinetics of standing, stepping and full gait cycles
- **Describe and Discuss** the kinematics and kinetics of abnormal gait patterns, deviations at segments and joints and categorization by segment deviation
- **Distinguish** the assessments required to determine the optimum 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** tuning concepts with patient case examples

## 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 (AACPD), American Academy of Orthotists and Prosthetists (AAOP) and the European Society of Movement Analysis of Adults and Children (ESMAC). She has recently received a UK national award (MBE) for services to children with disability.



## AGENDA

Thursday, December 12, 2019

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|---------|--|
| 7:30 am | Registration<br>10 <sup>th</sup> floor Sky Lobby<br>Shirley Ryan AbilityLab<br>355 E Erie St<br>Chicago IL 60611 |
| 7:50    | Welcome and Opening Remarks<br>Melissa Kolski, PT, OCS, Dip MDT<br>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<br>Segment and Joint Alignment<br>Segment Proportion |
|------|---|

	Normal Standing and Gait Kinematics, Segment and Joints
10:30	Break
10:45	Normal Standing and Gait Kinematics, Kinetics and Interactions
12:30 pm	Lunch (on your own) : Optional 30 min tour available
1:45	Normal Gait Muscle Actions
2:15	Clinical Assessment
3:00	Break
3:15	Clinical Assessment Assessing for the Angle of the Ankle in an Ankle-Foot Orthosis
4:30 pm	End of Day One

**Friday, December 13, 2019**

7:30 am	Continental Breakfast 10 <sup>th</sup> floor Auditorium Shirley Ryan AbilityLab
8:00	Discussion Musculotendinous Units - Properties and Adaptation (Pre-Reading) 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 Clinical Algorithm for Determining Suitability for Dorsiflexion Free AFOs Clinical Algorithm for Determining the Sagittal Angle of the Ankle in an AFO
11:00	Break
11:15	Clinical Algorithm for Designing, Aligning and Tuning AFOs & Footwear Clinical Algorithm for determining MTPJ free or fixed AFO design Categorization of Gait Patterns, based on Shank Kinematics Guidelines for Shank to Vertical Angle Static Alignments for each gait category
12:30 pm	Lunch (on your own)
1:45	Guidelines for Optimizing Heel and Sole Designs Guidelines for Optimizing Rocker Sole Designs for each gait category, type and position
2:15	Video Vector Gait Laboratory Demonstrations of Abnormal Gait Patterns and Optimal Orthotic Management Common Case presentations of each gait category

Case Studies; Group Work / Single Work

- 3:15 Break
- 3:30 Video Vector Demonstrations, Case Studies and Group Work *continued*
- 5:00 Discussions of Day 3 Patients, in preparation of Day 3.
- 5:30 pm End of Day Two

**Saturday, December 14, 2019**

- 7:30 am Continental Breakfast  
10<sup>th</sup> floor Auditorium  
Shirley Ryan AbilityLab
- 8:00 Introduction to the Video Vector Gait Laboratory  
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
- 10:15 Final Patient Discussion
- 10:45 pm Patient 2  
Clinical Assessment  
Video Vector Gait Analysis
- 12:00pm Lunch Break
- 1:00pm Patient 2  
Video Vector Gait Analysis  
Tuning of AFO Footwear Combination using Video Vector, Group Work
- 2:30pm Final Patient Discussion
- 3:00 pm Conclusion of Course

## TUITION FOR 25.50 CEUs

Early Bird Registration (Up to August 15 <sup>th</sup> )	\$675
Registration Fee (after August 15 <sup>th</sup> )	\$725

## LOCATION

The program will be held at the Shirley Ryan AbilityLab. The conference site is wheelchair accessible. Accessible materials, sign language interpretation and personal assistance are available with at least 45-days advance notice.

## HOUSING

Rooms have been reserved at the Hampton Inn Chicago Downtown Magnificent Mile, 160 East Huron Street, Chicago, IL 60611.

The Hampton Inn Chicago Downtown Magnificent Mile is located 2½ blocks from the Shirley Ryan AbilityLab. Please contact their reservations department from 9:00 am until 5:00 pm at (312) 787-2900 and ask for the Pediatric Gait Analysis room block or use this link to register online: <http://hamptoninn.hilton.com/en/hp/groups/personalized/C/CHIDMHX-K29-20191211/index.jhtml>. The corporate room rate is \$119.00 for a deluxe king (single or double occupancy) and \$139.00 for two queen beds in the room plus the \*17.4% tax. The daily rate for parking at the Hampton Inn Chicago Magnificent Mile is \*\$66.00/day. **The corporate room rate will be available until November 11, 2019 or until the group block is sold-out, whichever comes first.**

\*The rates for parking and taxes are subject to change without advanced notice.

## CANCELLATION POLICY

All cancellations must be in writing. Refunds less a 20% administrative charge will be given until **Nov 29, 2019**. 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. The Academy is not responsible for the refund of travel or hotel expenses under any circumstance.

## 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.

Do not make airline reservations that have cancellation penalties until we confirm your registration. However, you should make hotel reservations as soon as possible.

**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 25.50 Contact Hours (5.0 Hours Self-Study 20.5 Live). Approval #216-000069

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 three-day course has been approved for 25.50 Contact Hours (5.0 Hours Self-Study 20.5 Live).

The Illinois Early Intervention Training Program has been approved for this event for 25.5 hours of EI credential credit in the area of 2.0 - Assessment, 3.0 - Atypical Development, 19.0 – Intervention, 1.5 - Typical Development

#### **Orthotics**

This program has been approved for up to 25.5 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.

**Register Online at [www.sralab.org/academy/PedsGait19](http://www.sralab.org/academy/PedsGait19) or complete the form below and return with payment**

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Dec 12-14, 2019

Early Bird Tuition up to August 15<sup>th</sup>: \$675      Tuition After August 15<sup>th</sup>: \$725

Mail to: Academy  
Shirley Ryan AbilityLab, 12-1835  
355 E. Erie Street, 12<sup>th</sup> floor  
Chicago, Illinois 60611

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

First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Home Phone ( \_\_\_\_\_ ) \_\_\_\_\_ Prof. Initials \_\_\_\_\_

Home Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Organization/Facility \_\_\_\_\_

Work Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Work Phone ( \_\_\_\_\_ ) \_\_\_\_\_ Fax ( \_\_\_\_\_ ) \_\_\_\_\_

Position \_\_\_\_\_

E-mail (required) \_\_\_\_\_

**Please note: Registration cannot 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.