

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

Dates: October 21, October 28, November 4, November 11, November 18, December 2, and December 9, 2022



Advanced Pediatric Gait Analysis

Date: February 11, 2023

Shirley Ryan
Abilitylab

In collaboration with



Pediatric Gait Analysis and Orthotic Management

OSKAR An Optimal Segment Kinematics and Alignment Approach to Rehabilitation

COURSE DESCRIPTION

This live, online course takes a fresh approach to the observation and analysis of typical and atypical patterns of standing, stepping and walking with full gait cycles, OSKAR. The course will span 8 weeks with 7 half-days of lectures and interactive discussions, including extensive video vector gait laboratory case studies. The alignments, kinematics and kinetics of standing and walking, and the atypical patterns of disabling conditions will be reviewed with particular reference to orthotic management and rehabilitation programs. Patient cases will focus on cerebral palsy, neural tube defects and other childhood-onset disabling conditions, but are applicable to adults with a childhood-onset disability or acquired 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 and “AFO footwear combinations”, the 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. A new Pictorial Tool to facilitate collaborative decision-making between clinicians and families, about goals, optimum orthosis design, and dosage, will be presented.

Video Vector gait laboratory case examples will help participants refine their clinical decision-making skills in gait analysis, orthosis and footwear design, and alignment of the ankle foot-orthosis and the AFO Footwear Combination. Participation from the audience, by polling, will occur extensively during the case examples.

Upon completion of the course, participants will be able to apply the principles directly to their working practice. A comprehensive manual accompanies the course.

Successful completion:

Participants will complete 6 hours of self-study activities in advance of the course and 2 hours during the course, in addition to 25.5 contact hours = 33.5 hours. The self-study activities for the course will consist of readings, a 60-minute on-demand webinar on Maturation of Gait, an on-demand viewing of Clinical Assessment Pre-Work, 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 course, participants must sign in and complete an online evaluation. If you are unable to attend a live session, the program will be recorded and can be watched on-demand. A weekly 60-minute live discussion session with Elaine will be provided for on-demand participants, at 3-4 PM CST on October 28th, November 4th, 11th, 18th, and December 2nd, 9th and 12th.

There are two ways in which to take this course:

1. Take the course live, attending one online session each week. If you miss a live session, a recording will be available the following day. There will be a 60-minute live discussion session to match the experience of the live breakout sessions.
2. You can also take this course on-demand, on a self-paced basis. The recordings of each session will be released one day following the live event and you must complete all of the material before December 19th, 2022. This program has been designed to allow the learner to progress at their own pace. It is recommended that each session be completed within 1 week. Additional discussion hours are scheduled to speak directly with Elaine Owen about the content. See Live Discussion Session Options

For both tracks, the course requirements must be completed by **December 19th, 2022** in order to receive credit. Course rosters will be sent to ABC (for orthotists) at this time. Participants will have extended access to view materials through March 12, 2023 for review purposes only.

All course pre-work will be made available by August 21, 2022.

WHO SHOULD ATTEND

Orthotists, Pediatric Physical Therapists, Physical Therapists working with acquired or childhood-onset disability in adulthood, Orthotic Assistants, Physical Therapist Assistants, Orthotic Technicians, Orthotic Fitters, Pedorthists, Physicians, and Surgeons (not offering CME). Other professionals working in pediatrics have also found the content relevant and valuable.

LEARNER OUTCOME

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

Apply a Pictorial Tool for collaborative goal setting across the ICF components of body structures, body functions, activities, and participation, for children who use ankle-foot orthoses.

Demonstrate the 4 clinical algorithms for determining optimal orthotic designs, alignments, and dosage in order to implement OSKAR (the Optimum Segmental Kinematics and Alignment approach to Rehabilitation.) The algorithms consider not only the ankle-foot orthosis but the entire AFO Footwear Combination.

COURSE OBJECTIVES

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

- Describe and Discuss** the essential concepts of the Optimal Segmental Kinematics and Alignment approach to Rehabilitation (OSKAR)
- Describe and Discuss** the potential short- and long-term goals, across the ICF, for children who use AFOs
- Describe** optimum segment alignment, proportion and kinetics of stable standing

- **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 walking
- **Differentiate between** stepping walking and full gait cycle walking
- **Discuss** the intersegmental coordination of maturing gait patterns
- **Describe** and **Discuss** the kinematics and kinetics of atypical gait patterns, deviations at segments and joints and categorization by segment deviation
- **Demonstrate** use of digital video to perform sagittal and coronal gait analysis
- **Demonstrate** essential lower limb clinical assessments for gait analysis
- **Distinguish** and **Discuss** the biomechanics of a variety of AFO and footwear designs and the alignment, refinement and tuning of these designs to optimize standing and walking
- **Discuss** the relevance of segment proportion to orthotic prescriptions
- **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
- **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
- **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
- **Describe** OSKAR functional gait training and motor learning programs for standing and walking with AFO's and Footwear
- **Describe** other OSKAR therapy interventions

LIVE DISCUSSION SESSION FOR ON-DEMAND PARTICIPANTS (OPTIONAL)

2022	Q&A for On-demand attendees	TIME USA -6 from UK CST	TIME UK	TIME AUS +11 from UK	TIME NZ +13 from UK
28 th OCT	Q&A for Session 1	3.00-4.00pm	9.00-10.00pm	7.00 – 8.00am (29 th Oct)	9.00-10.00am (29 th Oct)
4 th NOV	Q&A for Session 2	3.00-4.00pm	8.00-9.00pm	7.00 – 8.00am (5 th Nov)	9.00-10.00am (5 th Nov)
11 th NOV	Q&A for Session 3	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am (12 th Nov)	10.00-11.00am (12 th Nov)
18 th NOV	Q&A for Session 4	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am (19 th Nov)	10.00-11.00am (19 th Nov)
2 nd DEC	Q&A for Session 5	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am (3 rd Dec)	10.00-11.00am (3 rd Dec)
9 th DEC	Q&A for Session 6	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am (10 th Dec)	10.00-11.00am (10 th Dec)
13 th DEC	Q&A for Session 7	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am (14 th Dec)	10.00-11.00am (13 th Dec)

COURSE FACULTY

Elaine Owen, MBE, MSc, SRP, MCSP

This course is presented by Elaine Owen, who has developed the OSKAR approach to rehabilitation. Elaine Owen has been practicing as a physical therapist since the 1970s, working within and managing interdisciplinary multiagency childhood onset disability services. She has postgraduate training in all areas of paediatric therapy, and qualifications in Lower Limb Orthotic Biomechanics and Clinical Gait Analysis. Her MSc in Rehabilitation Studies, included a thesis about orthotic management of neurological conditions, normal standing and gait. She is ESMAC trained in Clinical Gait Analysis. For over 30 years she has used a video vector gait laboratory for gait analysis, and orthotic and physical therapy management of children and adults, at Bangor, UK and other locations, during which time OSKAR was developed. She has peer reviewed publications and 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) World Congress, American Academy for Cerebral Palsy and Developmental Medicine (AAPDM), 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. She has lived experience as a caregiver of a child with a disability.



PEDIATRIC GAIT COURSE AGENDA

DAY 1 - ONLINE

AEDST – Friday October 21, 2022 11:30pm – Saturday October 22, 4:00am

- Introduction to: OSKAR – Optimal Segment Kinematics and Alignment Approach to Rehabilitation
 - Goals and outcomes for orthotic interventions, an 'Inside-out' and ICF Approach Pictorial Tool for Collaborative Goal Setting
 - Terminology and definitions
 - Segment and joint alignment, proportion, stiffness, and profile
- Review of standing:
 - Segment and joint alignments, segment proportion, stiffness, and profile
 - Kinematics, kinetics, and their interaction.
 - Conditions for stable standing, relevance for stable walking
 - Effect of footwear design
- Introduction to kinematic and kinetic analysis of walking.
 - Full Gait Cycle walking
 - Stepping walking

DAY 2 - ONLINE

AEDST – Friday October 28, 2022 11:30pm – Saturday October 29, 4:00am

- Typical/normal walking patterns.
 - Kinematics; segments and joints
 - Kinetics; forces, moments
 - Interaction between kinematics and kinetics

DAY 3 - ONLINE

AEDST – Friday November 4, 2022 11:30pm – Saturday November 5, 4:00am

- Typical/normal walking patterns continued.
 - Kinetics; muscle actions
 - Interaction between kinematics and kinetics
- Muscle tendon units – properties and adaptation & discussion of pre-course reading
- Review of clinical assessments
 - Review Clinical Assessment Video prework in advance of this session.

DAY 4 - ONLINE

AEDST – Friday November 11, 2022 11:30pm – Saturday November 12, 4:00am

- Atypical walking patterns
 - Categorization of atypical gait patterns, by segment alignment
 - Segment and joint kinematics and kinetics of each gait category
- Development of mature walking patterns and intersegmental coordination
- Goals and Outcomes for Orthotic Interventions
 - An 'Inside-out' and ICF Approach
 - Use of a Pictorial Tool for collaborative goal setting - short-and long-term
 - Use of Pictorial Tool to determine optimum orthosis and footwear designs
 - Use of a Pictorial Tool to determine optimum dosage for orthotic intervention
- The influence of OSKAR in achieving goals and outcomes for bones and joints; muscle tendon and skin; motor control, learning and development; activities; participation; pain.
- OSKAR Functional Gait Training

DAY 5 - ONLINE

AEDST – Friday November 18, 2022 11:30pm – Saturday November 19, 4:00am

- Biomechanics of Ankle-Foot Orthoses and Footwear
 - Alignment, proportion, stiffness, profile
 - Sagittal, coronal, transverse and triplanar considerations
 - Influence of footwear design and adaptations
- Clinical Algorithm 1. Designing, Aligning and Tuning AFOs & Footwear
- Clinical Algorithm 2. Determining Suitability for Dorsiflexion Free AFOs
- Clinical Algorithm 3. Determining the Sagittal Angle of the Ankle in an AFO
- Clinical Algorithm 4. Determining MTPJ free or MTPJ fixed AFO design
- Guidelines for Shank to Vertical Angle Static Alignments for gait categories
- Guidelines for Optimizing Heel and Sole Designs
- Guidelines for Optimizing Rocker Sole, type and position for gait categories

DAY 6 - ONLINE

AEDST – Friday December 2, 2022 11:30pm – Saturday December 3, 4:00am

- Capturing quality clinical videos for two-dimensional motion analysis
- Toolkit for video capture and optimizing AFO Footwear Combinations
- Case Studies
 - Video Vector Gait Laboratory demonstration of atypical gait pattern
 - Review of clinical assessment
 - Goals, short- and long-term, using Pictorial Tool
 - Use of algorithms, to determine the optimal orthotic prescription
 - Use of goals and Pictorial Tool to determine AFOFC frequency of use, dosage
 - Demonstration of outcomes, short- and long-term

DAY 7 - ONLINE

AEDST – Friday December 9, 2022 11:30pm – Saturday December 10, 4:00am

- Case Studies
 - Video Vector Gait Laboratory demonstration of atypical gait pattern
 - Review of clinical assessment
 - Goals, short- and long-term, using Pictorial Tool
 - Use of algorithms, to determine the optimal orthotic prescription
 - Demonstration of outcomes, short- and long-term

ADVANCED PEDIATRIC GAIT ANALYSIS (1-Day)

February 10, 2023

NOTE: The prerequisite for this course is to have attended a Pediatric Gait course facilitated by Elaine Owen, MSc, SRP, MCSP in the past.

COURSE DESCRIPTION

This online, live course is intended primarily for pediatric physical therapists and orthotists with a working knowledge of pediatric gait assessment. This online course will provide an in-depth analysis of short- and long-term goal setting across the ICF, and the AFO footwear combination design, alignments, and dosage to optimize gait and other outcomes. Participants will have an opportunity to work through video case studies and the surrounding clinical decision-making skills involved in gait analysis and orthotic design. Elaine's algorithms will be extensively reviewed through the video examples and opinion polling. 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 and complete an online evaluation.

This course may be taken live or on-demand. In order to receive credit, all course requirements must be completed by **February 17th**. You will have access to review course materials through May 11, 2023.

COURSE OBJECTIVES

- **Discuss and Defend** the essential concepts of the Optimal Segmental Kinematics and Alignment approach to Rehabilitation (OSKAR)
- **Identify, Distinguish and Discuss** the kinematics and kinetics of atypical gait patterns, gait deviations at segments and joints and categorization of atypical 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.
- **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 gait analysis and tuning sessions.
- **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

Saturday February 11, 2023

Time shown in AEDST

- 12.45am Welcome and Opening Remarks
Melissa Kolski, PT, DPT
Education Program Manager
- 1.00am Review of short- and long-term Goals and Outcomes for Orthotic Interventions:
an 'Inside-Out' and ICF Approach, and Pictorial Tool for Collaborative Goal
Setting.
- 2.00am Video Patient Demonstration, Child 1
Audience participation in decision-making throughout, by polling.
Review of Clinical Assessment
Video Vector Gait Laboratory demonstration of atypical gait pattern.
Goal Setting for Short, Medium and Long Term in all areas of ICF, using
Pictorial Tool
- 3.00am Break
- 3.15am Determining Initial AFO Footwear Combination Prescription, use of algorithms
Optimizing Initial AFO Footwear Combination using Video Vector
Laboratory
Final optimum orthotic prescription, design and dosage.
Longitudinal Review of the Case over 5 years & Outcomes
- 5.00am Break
- 6.00am Video Patient Demonstration, Child 2
Audience participation in decision-making throughout, by polling.
Review of Clinical Assessment
Video Vector Gait Laboratory Analysis
Goal Setting for Short, Medium and Long Term in all areas of ICF, using
Pictorial Tool
- 7.30am Break
- 7.45am Determining Initial AFO Footwear Combination Prescription, use of algorithms
Optimizing Initial AFO Footwear Combination using Video Vector Laboratory
Final optimum orthotic prescription, design and dosage.
Longitudinal Review of the Case over 5 years & Outcomes
Final Discussion
- 9.00am Conclusion of the Advanced Course

TUITION

3 Course Options:	Before August 3	After August 3
Pediatric Gait (33.5 Hours)	\$550	\$650
Pediatric Gait (33.5 Hours) & Advanced Pediatric Gait (6.5 Hours)	\$700	\$850
Advanced Pediatric Gait Only (6.5 Hours)	\$200	\$300

CANCELLATION POLICY

All cancellations must be in writing. Refunds less a 20% administrative charge will be given until **September 21, 2022**. The Academy reserves the right to cancel or change any programs for due cause. The 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 Australian Physiotherapy Association for 33.5 Contact Hours (8.0 Hours Self-Study 25.5 Live).

This course has been approved by the Illinois Physical Therapy Board for 33.5 Contact Hours (8.0 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 three-day course has been approved for 33.5 Contact Hours (8.0 Hours Self-Study, 25.5Live). Advanced course has been approved for an additional 6.5 contact hours.

The following states require continuing education units with no state-specific approval: CT, IA, and WA

The Illinois Early Intervention Training Program has been approved for this event for EI credential credit in the area of 2.0 – Assessment, 3.0 - Atypical Development, 27.0 – Intervention, 1.5 - Typical Development

The Illinois Early Intervention Training Program has been approved for the Advanced course for EI credential credit in the area of 3.0 - Assessment, 1.0 - Atypical Development, 2.0 – Intervention, 1.0 - Typical Development.

Orthotics

This program has applied for up to 33.5 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 applied for 6.5 credits.

Register Online at www.sralab.org/PedsGait22 or complete the form below and return with payment

Circle the program you are choosing in the table below:

Tuition	Before August 3	After August 3
Pediatric Gait (33.5 Contact Hours), October 21 - December 9, 2022	\$550	\$650
Pediatric Gait & Advanced Pediatric Gait (33.5 Contact Hours), October 21 - December 9, 2022 & February 10, 2023	\$700	\$850
Advanced Pediatric Gait (6.5 Contact Hours) - February 10, 2023	\$200	\$300
Use code APAGait22 for \$25.00 off		

Mail to: Academy
Shirley Ryan AbilityLab
355 E. Erie Street, 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 _____
 Home Address _____
 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 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.