

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

October 29, November 5, November 12, November 19, December 3, and December 11, 2021



Advanced Pediatric Gait Analysis

January 14th 2022

Shirley Ryan
Abilitylab

355 East Erie Street
Chicago, IL 60611

In collaboration with



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

COURSE DESCRIPTION

The online live course explores 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 6 weeks with 5 half days of interactive lectures and 1 full day live on a video vector gait laboratory. 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. Patient cases will focus on cerebral palsy, myelomeningocele and other neurological conditions, but are applicable to other diagnoses and adult 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. A new Pictorial Tool, for clinicians and families, to facilitate collaborative decision making 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 and orthosis design and alignment. 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 into their working practice. A comprehensive manual accompanies the course. The appearance of Live Video Vector cases on the last day of the course will depend on the availability of social distancing protocols and ability to observe live gait assessment on the Vector Laboratory. Pre-recorded Video Vector cases will be reviewed as an alternative.

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 on-site portion of the course, participants must sign in and complete an online evaluation.

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

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 November 5th, 12th, 19th, and December 3rd and 10th.

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** 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
- **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
- **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

LIVE OFFICE HOUR OPTIONS

2021	Q&A for On-demand attendees	TIME USA -6 from UK CST	TIME UK	TIME AUS +11 from UK	TIME NZ +13 from UK
5 th NOV	Q&A for Session 1	4.00-5.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am
12 th NOV	Q&A for Session 2	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am
19 th NOV	Q&A for Session 3	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am
3 rd DEC	Q&A for Session 4	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am
10 th DEC	Q&A for Session 5	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am
13 th DEC	Q&A for Session 6	3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am

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 25 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.



PEDIATRIC GAIT COURSE AGENDA

LIVE DATES: October 29, November 5, November 12, November 19, December 3 and December 11, 2021

October 29, 2021: DAY 1

7:30AM -12.00PM CST Chicago [10 min breaks at 8.50, 9.50, 10.50AM] = Sydney AEST 11:30PM – 4AM

Introduction to:

- OSKAR – Optimal Segment Kinematics and Alignment Approach to Rehabilitation
- Goals and Outcomes for orthotic interventions. An ICF Approach and Pictorial Tool
- Segment and joint alignment, proportion, stiffness, and profile
- Terminology and definitions

Review of standing:

- Segment and joint alignment, 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

November 5, 2021: DAY 2

8:00AM -12.00PM CST [10 min breaks at 8.50, 9.50, 10.50AM] AEST 12AM – 4AM

Typical/normal walking patterns.

- Kinematics; segments and joints
- Kinetics; forces, moments, and muscle actions
- Interaction between kinematics and kinetics

Development of mature walking patterns and intersegmental coordination

Introduction to atypical/abnormal walking patterns

November 12, 2021: DAY 3

8.00 AM -12.00PM CST [10 min breaks at 8.50, 9.50, 10.50AM] AEST 12AM – 4AM

- Goals and Outcomes for Orthotic Interventions: an ICF Approach and Pictorial Tool
- Use of Pictorial Tool to determine goals and dosage for orthotic intervention
- The influence of OSKAR in achieving goals and outcomes.

Review of clinical assessments

Discussion Musculotendinous Units - Properties and Adaptation (Pre-Course Reading)

November 19, 2021: DAY 4

8:00AM -12.00PM CST [10 min breaks at 8.50, 9.50, 10.50AM] AEST 12AM – 4AM

Biomechanics of Ankle-Foot Orthoses and Footwear
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

December 3, 2021: DAY 5

8:00 -12.00PM CST [10 min breaks at 8.50, 9.50, 10.50AM]

Categorization of atypical/abnormal gait patterns, based on Shank Kinematics.
Kinematics and kinetics of each gait category.

Case Studies;
For each case;

Audience participation in decision making, by polling.
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 optimal orthotic prescription.
Demonstration of outcomes - short and long term

December 11, 2021: DAY 6 All day, 2 sessions

[2 (30) minute breaks and 1 (60) min break for lunch] AEST 12AM(Dec11)

8:00	Introduction to the Video Vector Gait Laboratory Discussions of Day 6 Patients Discussion of Clinical Assessment Cases 1 and 2
8:45	Patient 1 Participation from the audience, by polling, will occur extensively during the live case. Clinical Assessment Video Vector Gait Analysis Tuning of AFO Footwear Combination using Video Vector
10:00	Break
10:30	Patient 1 continued. Final Patient Discussion
12:00 PM	Lunch
1:00	Patient 2

	Participation from the audience, by polling, will occur extensively during the live case.
	Clinical Assessment
	Video Vector Gait Analysis
	Tuning of AFO Footwear Combination using Video Vector, Group Work
2:45	Break
3:15	Patient 2 continued Final Patient Discussion
4:30	Debrief on the course
5:00	Conclusion of Course

ADVANCED PEDIATRIC GAIT ANALYSIS (1-Day)

NOTE: 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 "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. 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.

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

January 14th, 2022 AEST 10:45PM (Jan 14) – 7AM (Jan 15)

- 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 and Pictorial Tool
- 9:00 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
- 10:00 Break
- 10:15 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 3 years & Outcomes
- 12:00PM Lunch
- 1:00 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
- 2:30 Break
- 2:45 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 3 years & Outcomes
Final Discussion
- 4:00 Conclusion of the Advanced Course

January 17th 3-4 CST Office Hours for Advanced Peds Gait

	UK	AEST (ON Jan 18th)	NZ (ON Jan 18th)
3.00-4.00pm	9.00-10.00pm	8.00 – 9.00am	10.00-11.00am

TUITION

3 Course Options:	Before August 5	After August 5
Pediatric Gait (31.5 Hours)	\$550	\$650
Pediatric Gait (31.5 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 29, 2021**. 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 25.5.0 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 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 following states require continuing education units with no state specific approval: CT, IA, and WA

The Illinois Early Intervention Training Program has approved this event for EI credential credit in the area of 2.0 - Assessment, 3.0 - Atypical Development, 20.0 - Intervention, 1.5 - Typical Development

The Illinois Early Intervention Training Program has approved 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 been 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 approved for 6.5 credits.

Register Online at www.sralab.org/PedsGait21 or complete the form below and return with payment

Circle the program you are choosing in the table below:

Tuition	Before August 5	After August 5
Pediatric Gait (31.5 Contact Hours), October 29 - December 11, 2021	\$550	\$650
Pediatric Gait & Advanced Pediatric Gait (31.5 Contact Hours), October 29 -December 11, 2021 & January 14, 2022	\$700	\$850
Advanced Pediatric Gait (6.5 Contact Hours) - January 14, 2022	\$200	\$300

**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.