

**Tutorial #3 - Tuesday, May 23, 2017 3:30pm-5:50pm**

**Title:** Successful Practices for Instrumented Gait Analysis: Insight from CMLA Accreditation

**Instructors:** James Carollo PhD, PE, John Henley PhD, Tom Novacheck MD and Susan Rethlefsen DPT.

**Purpose:** The concept of this tutorial is to present laboratory procedures and successful practices culled from 8 years of independent clinical motion laboratory accreditation reviews, by members of and applicants to the Commission for Motion Laboratory Accreditation (CMLA). By sharing these lessons learned, the general community of clinical motion analysis practitioners can be better equipped to provide the highest quality services to their clients, and be prepared for achieving Full Accreditation by CMLA.

**Intended Audience:**

1. Individuals interested in applying for clinical motion laboratory accreditation
2. Any professionals serving or supporting instrumented gait analysis facilities who are interested in successful practices that assure the highest laboratory quality.

**Pre-requisite knowledge:** none

**Abstract/Introduction:** The Commission for Motion Laboratory Accreditation (CMLA) is the only independent clinical motion laboratory accreditation body in the western hemisphere, and has been reviewing accreditation applications from the public since 2008. During this time the Commission has observed from their applicants a variety of ways to approach the goal of delivering high quality clinical motion analysis services. This tutorial will share information inspired by successful practices from accredited laboratories in the US, and will focus on 4 major components that comprise the unique measurements and procedures necessary to deliver quality clinical motion analysis services. These 4 areas are 3D Motion, Dynamic EMG, Physical Exam measures, and Clinical Interpretation/Recommendations. We outline each of these areas as follows.

**3D motion:** Presenter, John Henley PhD.

This presentation will look at three methods to test the quality and accuracy of the 3D motion and kinetic measurements made in a motion analysis laboratory. The first covers the use and application of the SAMSA device to provide a standard data set to evaluate your equipment, configuration and lab environment. The second covers the use of the CalTester which provides a tool and methodology to measure the spatial and temporal correspondence and alignment force and motion data. The third explores a method that uses constant aspects of your 3D motion data to evaluate the accuracy and quality of the collection and processing motion data given that each data collection trial may present a unique and dynamic challenge.

**Dynamic EMG:** Presenter, James Carollo PhD, PE

This presentation focuses on methods to assure accuracy, repeatability, and highest quality of electromyographic recordings used during movement analysis. The focus will be on ways to confirm proper muscle placement with surface and fine wire electrodes prior to recording, and periodic quality assurance practices to improve recording accuracy and confidence in muscle timing information. The successful practices described will be delivered in the context of how to best accomplish these procedures in a clinical environment and communicate these practices on an accreditation application.

**Physical Exam:** Presenter, Susan Rethlefsen DPT

This presentation will focus on methods of attaining initial competency, maintaining competency and measuring reliability of staff for all aspects of physical examination related to gait analysis testing. The importance of setting up standardized procedures will be emphasized. Methods will be presented for training new staff in physical examination procedures and establishing their reliability with existing staff. Methods will be presented for routine assessment of inter- and intra-examiner reliability for range of motion, spasticity, selective control and strength assessments, keeping in mind the practical aspects of assessing reliability in a busy laboratory environment. Examples will be given to illustrate all of the above, based on the faculty's personal experience going through the CMLA accreditation process.

**Interpretation/Recommendations:** Presenter, Tom Novacheck MD

In the assessment of individuals with walking difficulties, many pieces are needed to create a comprehensive picture of the orthopaedic and neurological impairments confronting a patient. The preceding presentations covered how to ensure the quality of these components. The final step is to accurately interpret this information to generate a comprehensive problem list and individualized treatment plans that will most benefit the patient. This presentation will cover protocols and practices a laboratory can incorporate to guarantee initial competency of new staff, ensure ongoing quality of seasoned staff and ensure that interpretation of clinical data and recommendations for treatment are of the highest quality.

**Outline:**

- Introduction: 2 min
- Part One: 3d motion: 29 min including questions
- Part Two: Dynamic EMG: 29 min including questions
- Part Three: Physical Exam: 29 min including questions
- Part Four: Interpretation/Recommendations: 29 min including questions
- Summary/Wrap Up/Conclusion: 2 min