

Tutorial #4- Tuesday, May 17, 3:15pm-5:15pm

Title: The Checklist Manifesto for Researchers in Gait Analysis: *How to get things right from study design to research proposal to publication*

Instructors: Michael Orendurff, Ph.D., and Mark Geil, Ph.D.

Purpose: To introduce the Checklist concept to improve quality at each stage of the research lifespan, identifying commonly missed elements and simple fixes.

Intended audience: Motion analysis researchers (clinical or academic) and students intending to conduct research

Prerequisite knowledge: Cursory knowledge of the research process.

Abstract: The research lifespan, from idea to dissemination, contains multiple stages, each with important elements and details. In fact, the process is so full of details that even the most experienced researcher can miss something important in an early stage that has implications on the rest of the process. Inspired by Atul Gawande's bestseller, this tutorial will present a "Checklist Manifesto" for every major step in the research lifespan: study design, proposal development and submission, study execution, and manuscript preparation and submission. In each stage, common deficiencies will be highlighted, including simple steps along the way that may enhance the level of evidence generated in the end. Specific application to gait analysis will personalize the content. Examples include blinding, proper description of assistive devices, commonly missed elements in funding proposals, and reporting of effect sizes. Ultimately, each participant will come away with a set of checklists to be used for every new research project, from birth to dissemination, and knowledge of how to use them.

Learning Objectives: At the completion of this presentation, attendees will be able to: (1) effectively utilize a set of checklists to improve quality of research projects, and (2) Identify common missing elements in study design, proposal development, study execution, and manuscript preparation and submission.

Outline of Course Content: The tutorial will follow the research process chronologically, from inception of idea to dissemination of results.

1. Introduction and Context (15 minutes)
 - a. Research in motion analysis
 - i. Settings
 - ii. Funding Agencies
 - iii. Dissemination outlets
2. Checklist for Study Design (20 minutes)
 - a. What to learn from Systematic Review guidelines
 - b. What must be decided before the study starts
3. Checklist for Proposal Development (30 minutes)
 - a. The perspective of the grant reviewer
 - b. The most common items missing from federal proposals
 - c. The essential item to get right

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4. Checklist for Study Execution (25 minutes)
 - a. Actually making randomization and blinding work
 - b. Common mistakes with IRB and human subjects that many miss
5. Checklist for Manuscript Preparation and Submission (30 minutes)
 - a. The perspective of the manuscript reviewer
 - b. Revisiting systematic reviews
 - c. An extra list: revise and resubmit