



OCCUPATIONAL THERAPY

Faculty Scholarly Agenda

Faculty Name: Matthew Foreman, PhD

Capstone Group: Motion Analysis Laboratory

Date: December 2021

Department Scholarly Agenda Statement:

Our departmental faculty scholarship agenda seeks to build quality evidence that spans the depth and breadth of the occupational therapy profession. The OTD program faculty, in collaboration with our students, strive to advance the profession through scholarly engagement, enrichment, and empowerment. Collectively, our scholarly work will create a well-rounded, creative, and collaborative environment that uses a multidisciplinary approach to incorporate the basic and applied sciences, including rehabilitation science, health and wellness, social sciences, and engineering. Pragmatically, our research is grounded in theory (e.g. PEOP), molded by the grantwriting process (e.g. NIH), and executed in clinical and community-engaged settings. Simultaneously, our faculty scholarship agenda coincides with the evidence-based practice and research course series, allowing us to build a strong peer-mentor relationship with our OTD students and foster student-led capstone scholarship. The ultimate goals of our work are to create evidence-driven occupational therapists and scientists who will contribute to advancing human health and wellness through participation in everyday life activities.

Individual Scholarly Approach (Mission, Threads, Approach to Student Collaboration)

Mission: The general mission of Methodist University’s Motion Analysis Laboratory is to take an interdisciplinary, science-driven approach to the quantification of bodily motion utilizing the latest cutting-edge technology to observe, model, and develop. Specifically, the Motion Analysis Laboratory OTD capstone group take a biomechanical approach toward the development of novel interventions intended to improve motor control, activity performance, and participation for persons living with chronic neuromotor conditions.

Threads: biomechanics, rehabilitation science, rehabilitation engineering, neuroplasticity, motor control and motor learning, task-based training, virtual reality and assistive technology, motor impairment, hippotherapy, chronic neurological conditions both adult and pediatric (stroke, SCI, ALS, CP, etc.)

Approach to Student Collaboration: In the Motion Analysis Laboratory, the majority of projects are student-driven under the guidance and advisement of faculty members as principal investigators and research mentors. These projects are, most often, sub-projects under the umbrella of a larger faculty-driven research agenda. There are many ongoing student- and faculty-driven projects occurring in the laboratory at any one time between the collaborative and supportive occupational therapy, physical therapy, exercise science, and engineering departments on campus.

To preserve internal validity, the mentor and student closely communicate and collaborate during the planning and execution phases of individual research projects. Weekly lab meetings allow groups to share knowledge, coordinate scheduling, and assist each other. The expectation is that each project should result in a publishable deliverable, whether it be to a local/national conference or to a relevant journal. The format of project progression mirrors the Clinical & Community Research Workshop course series and is intended to bring 2nd and 3rd year classes together in the final program semester for peer mentorship. Ultimately, this approach lends itself to (1) strong faculty-student and peer mentorship, (2) student ownership of feasible capstone research, and (3) progression of broader faculty scholarly agendas in conjunction with faculty-led research projects.



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The following is a list of ongoing or future project titles or topics and their respective estimated timelines.

| Scholarly Agenda | |
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| Project Title/Topic | Timeline <input type="checkbox"/> New/Future <input type="checkbox"/> Ongoing <input type="checkbox"/> In Dissemination |
| The validity and reliability of the Microsoft Kinect for measuring trunk compensation during reaching | In dissemination |
| A virtual reality tool for shaping trunk compensation during motor rehabilitation for persons with stroke: feasibility and preliminary efficacy | In dissemination |
| The Integrative Capacity Model: integrating clinical strength measurement to form a functional feasibility assessment | Ongoing |
| Virtual reality motor rehabilitation for persons with ALS | Ongoing |
| The effect of a mid-morning therapeutic riding program on classroom behaviors in high school aged special education students | Ongoing |
| The effects of boot fitting on gait, occupational performance, and overall wellness of U.S. military soldiers | Ongoing |
| Relationships between muscle power, performance skills, and functional classifications in wheelchair basketball players | Ongoing |
| The effect of an equine-assisted therapy intervention on upper extremity motor performance for individuals with neurological upper extremity motor deficits | Ongoing |
| Relationship between pre-sleep screen time, quality of sleep, and reaction time in a graduate student: a single-case research design | Ongoing |