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**Abstract**

Standard screening for pain-associated psychological distress, or “yellow flags”, has become a high priority area in orthopedic physical therapy, particularly among healthcare providers in direct access settings. Yellow flags are often precursors of delayed recovery and may indicate the need for psychologically informed interventions that could provide better outcomes than standard treatment.

The Optimal Screening for Prediction of Referral and Outcome Yellow Flag (OSPRO-YF) assessment tool is a concise, multidimensional questionnaire that was developed to aid physical therapists in screening for pain-associated psychological distress. It is capable of accurately estimating scores on 10 full-length psychological questionnaires and identifying patients at risk for poor clinical and healthcare utilization outcomes. However, its utility for clinical decision-making in psychologically informed treatment paradigms is limited. Specifically, high item multidimensionality makes it difficult to measure patient performance across psychological domains of negative affect, fear-avoidance and positive coping accurately. Precise and reliable psychological domain assessments are essential if the OSPRO-YF is to be used for efficiently stratifying care.

The primary aim of this project is to use item response theory (IRT) to develop an alternate version of the OSPRO-YF that measure domains of fear avoidance, negative mood, and positive affect/coping. The IRT-derived OSPRO-YF will improve treatment stratification and monitoring by providing more precise and reliable estimates of psychological domain performance. Existing data from the OSPRO development cohort study will be used for analysis.  These data include responses to 136 commonly used psychological questionnaire items from patients with neck, shoulder, low back, or knee conditions seeking physical therapy. In a secondary aim, we will compare IRT-derived item sets to those of empirically derived OSPRO-YF to assess the degree of item convergence. This will clarify whether a single, common item set is capable of estimating full-length questionnaire scores and informing treatment stratification, or if separate tools are required.

This project will set the foundation for future development of an OSPRO-YF computer adaptive test (CAT) that has the potential to directly benefit FOTO and its users. If incorporated into the FOTO Outcomes Management System, classification thresholds of the tool for the treatment and prediction of outcomes for patients with musculoskeletal pain could be tested and refined.

**Short Description**

Standard screening for pain-associated psychological distress, or “yellow flags”, is a high priority area in orthopedic physical therapy. This project will use item response theory (IRT) methods to develop a yellow flag screening tool that precisely and reliably measures patient performance on negative affect, fear-avoidance and positive coping psychological domains. Data will be sourced from the Optimal Screening for Prediction of Referral and Outcome (OSPRO) cohort study, an existing dataset that includes patients with low back, neck, shoulder and knee pain seeking physical therapy. The IRT-derived yellow flag screening tool will facilitate improved clinical decision-making and treatment monitoring for the management of musculoskeletal pain.

**Bio**

Trevor Lentz PT, PhD, MPH is a Postdoctoral Fellow at Duke University in the Duke Clinical Research Institute (DCRI). His research focuses on outcomes prediction following orthopedic surgery and other musculoskeletal pain-related treatments, with an emphasis on identifying key psychological factors that influence patient-reported outcomes and health care utilization. He is on the International Editorial Review Board for the *Journal of Orthopaedic and Sports Physical Therapy* and an Associate Editor for the *British Journal of Sports Medicine*. Trevor has received awards for his research from the American Physical Therapy Association, American Pain Society, and Foundation for Physical Therapy.