# Validation of the PROMIS physical function computer adaptive test among liver transplant recipients

Evan Tang[1] (pres.), Eric R. Mauti[1], Nazia Selzner[2], Ward Hajjar[2], Nathaniel Edwards[2], Istvan Mucsi[2], Susan J. Bartlett[3]

1. Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada
2. Kidney Transplant Program, Ajmera Transplant Centre, University Health Network, Toronto, Ontario, Canada
3. Centre for Health Outcomes Research, McGill University, Montreal, Quebec, Canada

## Objective

Physical function (PF) integrates motor function, motor control, and physical fitness. PF is an important component of everyday functioning and health-related quality of life. The Patient Reported Outcomes Measurement Information System (PROMIS) computer adaptive test (CAT) may offer greater precision and lower response burden compared to legacy questionnaires. Here we validate the PROMIS PF item bank administered as CAT in liver transplant recipients (LTR).

## Methods

A cross-sectional, convenience sample of adult LTR completed the PROMIS PF CAT, the 36-Item Short Form Health Survey (SF-36), and the EQ5D5L questionnaire using electronic data capture. Socio-demographic and clinical data were also collected. Reliability was assessed using average reliability, measurement error (standard error of measurement [SEM]), and test-retest reliability (intraclass correlation coefficient [ICC]). Construct validity was assessed using Pearson correlation between PROMIS PF and SF-36 PF scores, and known-group comparisons (higher scores expected in individuals without anemia, with fewer comorbidities, with better self-reported health). Discrimination of PROMIS PF CAT was assessed using receiver operating characteristic analysis. Reference categories (mobility problems yes/no) were defined by responses the mobility domain of the EQ5D5L (no problem vs. any problems).

## Results

Our sample included 160 LTR with a mean(SD) age of 55(15), 69% male, and 66% white. 57 participants (36%) reported mobility problems. Participants completed a mode (range) of 4 (4-12) PROMIS PF CAT questions, and 97% (n=151) had SEM <0.30 (reliability >0.90). Average reliability was good at 0.95 and ICC was 0.92. The PROMIS PF T score correlated strongly with SF-36 PF domain (r=0.84). Construct validity was further confirmed by known-groups comparisons, as higher PF scores were reported in participants without anemia (Cohen's d [d]=0.73; p< 0.001), lower comorbidity burden (d=0.60; p<0.001), better self-reported health (d=1.19; p<0.001), and greater mobility (d=1.52; p<0.001). The PROMIS PF CAT showed good discrimination for impaired mobility, with a c-statistic of 0.87.

## Conclusion

The data supports the reliability and validity of the PROMIS PF CAT for measuring PF in LTR.