Does PROMIS-29 Physical Function Reflect Actual Performance on Physical Function Testing in Older Adults?

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INTRODUCTION: Functional ability is a marker of successful treatment after fracture. In many studies, the primary outcome of fracture healing includes tests of physical performance. Poor physical function is also associated with high risk of another fracture. The methodology to assess functional ability varies greatly, from self-reported measures to physical performance tests. Numerous studies have shown that the ability to complete a short physical performance battery (SPPB; Guralnik et al. 1994) is related to: Future Disability, Nursing Home Admissions, and Mortality. The timed up and go test (TUG) – (Podsiadlo and Richardson 1991) is another performance measure that in some studies relates to fall and fracture risk. The aim of this study was to see if self-reported measures of functional ability assessed using PROMIS-29 or Lower Extremity Activity Scale Score (LEASS) are a good proxy for actual tested performance by SPPB or TUG. In addition, we compared TUG to SPPB.

METHODS: Subjects were patients recruited from our outpatient osteoporosis clinic into the Fragile Bone Registry (n=188). In-person testing of physical performance included the SPPB-which combines 4-meter walk speed, time for 5 chair stands and ability to maintain balance in 3 positions, and timed up and Go (TUG- the time to stand, walk 3 meters, turn, and walk 3 meters back). Each test takes less than 5 minutes to complete. The results of measured physical function were compared to two self-reported measures of physical performance, PROMIS-29 physical function and LEASS, both completed under supervision by a research assistant. Self-reported measures were compared to SPPB and TUG scores. In addition, TUG was compared to SPPB.

RESULTS: The correlation between PROMIS and SPPB was 0.57 (95% CI 0.46-0.66), better than the correlation between LEASS and SPPB 0.34 (95%CI 0.21-0.46). In the FBR, of participants whose physical performance by SPPB scored in the lowest quintile, 27% were in the highest quartile for PROMIS ($p<0.001$ fisher's exact test). The kappa, or level of agreement between SPPB and PROMIS was 0.7. Similarly, participants whose physical performance by SPPB scored in the lowest quintile, 27% were in the highest quartile for LEASS ($p<0.005$ fisher's exact test). The Kappa between SPPB and LEASS was 0.55. For subjects who tested in the highest quartile of TUG, 22% were in the lowest quartile by PROMIS ($p<0.001$ Fishers' Exact Test, Kappa = 0.72). From regression analysis, PROMIS explained 32% and LEASS explained 11% of the variance in SPPB. PROMIS was able to explain 29% and LEASS explained 12% of the variance in TUG. TUG explained only 48% of the variance in SPPB.

DISCUSSION AND CONCLUSION: In this cross-sectional study, over a quarter of participants self-reported a high level of physical performance, despite being in the lowest 20% of actual tested performance. In fact, self-reported measures only accounted for 30% of actual tested performance variability. Self-reported PROMIS physical function may not reflect actual tested physical performance.