Chronic low back pain (LBP) represents a heterogeneous condition affecting about 80% of people. Treatment outcomes are equivocal, in part, because classification systems that match patients to specific treatments are lacking. Physical therapists (PTs) use the Movement System Impairment (MSI) classification approach but it needs further refinement. To do this, we examined the: (1) agreement between two PT's performing the MSI examination; (2) functional outcomes following treatment; and (3) MSI classification agreement when using a shortened MSI examination.

For Aim1, two different PTs independently classified subjects with LBP (n=20) using the MSI approach and their percent agreement was determined. For Aim 2, one PT classified subjects with LBP (n=115) using the MSI approach and re-examined them after 6 weeks of physical therapy treatment. Using the two most prevalent MSI subgroups, we compared subjects' pre- and post-treatment Oswestry (OSW) scores. For Aim 3, using MSI data from subjects with LBP (n=115) we eliminated unnecessary clinical exam items, yielding a shorter MSI examination.

The two PT's had excellent agreement (80%) on the assigned MSI classification (kappa= 0.80). Pre-treatment OSW scores (mean ±sd) for the Rotation and Extension/Rotation classifications were 19.2 (10.1) and 18.8 (7.8), respectively. Following treatment, both groups significantly improved ($P<0.00$) their OSW scores [11.3 (7.0) and 11.5 (9.8), respectively]. Using the shortened MSI examination, five raters reclassified subjects with a percent agreement of 88% and a kappa=0.82.

Our results demonstrate that the two PT's were reliable when performing the MSI examination. Both MSI subgroups showed significant improvement in function following treatment. Lastly, the high inter-rater reliability of the shortened MSI examination in combination with positive treatment outcomes holds promise for clinical use of the shortened MSI examination, which we will examine in future research.