What problems did the researchers set out to study, and why?

Physical therapists frequently assess segmental mobility of the lumbar spine in patients with low back pain (LBP) by applying posterior-anterior (PA) forces to the lumbar vertebrae. However, the reliability of PA mobility testing has been previously reported as poor and no studies have assessed the validity of lumbar PA assessments in vivo. The authors of this study had 2 purposes. First, they determined the intertester reliability of PA mobility testing using a within-subject dichotomous scale (ie, identifying the most mobile and least mobile segments) to assess intersegmental motion of the lumbar spine. Second, they determined the validity of lumbar PA mobility testing in vivo with dynamic magnetic resonance imaging (MRI).

Who participated in the study?

29 individuals (mean age=31.3 years, range=18–45) with a diagnosis of nonspecific LBP participated. All participants had a recent onset of LBP (<3-month symptom duration) with no signs and symptoms of neural compromise related to lumbar disk pathology.

What new information does this study offer?

Although the intertester reliability was good for judging the lumbar segment perceived to be the least mobile, the intertester reliability was poor in judging the most mobile segment. Additionally, PA assessments of lumbar mobility did not agree with sagittal plane intersegmental motion as measured by dynamic MRI.

How did the researchers go about this study?

Posterior-anterior mobility testing of the lumbar spine was first assessed in the dynamic MRI environment. With the patient prone, a physical therapist with 15 years of manual therapy experience applied a PA force to each lumbar vertebra, starting at L5 and moving cranially to L1. Each PA force was applied slowly over 1 to 2 seconds and held at end-range for at least 5 seconds so an end-range MRI could be obtained. Once the physical therapist released the PA force on L1, a clear resting MRI of the lumbar spine was obtained and testing was concluded in the MRI environment. The physical therapist then recorded the lumbar segments that were most mobile and least mobile. The patient then was moved to another room where a second physical therapist with 16 years of manual therapy experience performed an identical PA motion assessment and recorded the lumbar segments that were most mobile and least mobile. The 2 physical therapists were not aware of each other’s findings.

How might the results of this study apply to the practice of physical therapy?

The fact that PA assessments of lumbar mobility did not agree with sagittal plane intersegmental motion as measured by dynamic MRI raises concerns regarding the validity of the PA procedure for assessing intersegmental lumbar spine motion. The authors speculate that clinicians may be influenced by spinal stiffness rather than perceived motion and this may account for the poor agreement between manual PA assessments and intersegmental lumbar spine motion on MRI.

What are the limitations of the study, and what further research is needed?

Relatively younger patients with a diagnosis of nonspecific LBP were assessed in this study. Extensive exclusion criteria also were used that eliminated many types of patients who would routinely be seen in physical therapy. Linear displacement in the form of PA translation of the lumbar vertebra was not assessed and this linear translation could have been wrongly interpreted as intersegmental motion. Future research should examine this topic and also determine whether clinicians are basing their manual PA assessments on perceived stiffness rather than intersegmental motion.

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