Objective: The purpose of this study was to assess the intrarater and interrater reliability of a broad range of techniques commonly used to assess the lower quarter.

Methods: A test-retest single group design was used to investigate the intrarater and interrater reliability of 22 lower quarter evaluation measures. Two raters conducted each measure twice on a total of 18 unimpaired subjects with an average age of 23.7 years. This study was conducted in the Human Performance Research laboratory at a university setting. Intraclass correlation coefficients were used to assess reliability of continuous variables, and weighted \( \kappa \) was used to assess nominal or ordinal results.

Results: Side differences were not found \( (P > .05) \); thus, data for right and left legs were pooled \( (n = 36) \) where applicable. Intraclass correlation coefficient and weighted \( \kappa \) results ranged from a low of 0.06 to a high of 0.99. Intrarater reliability results were generally higher than interrater reliability results.

Conclusion: Many of the clinical measures demonstrated good overall reliability. For those tests where acceptable intrarater and interrater reliability cannot be demonstrated, additional training of raters, modification of the technique, or elimination of the technique’s use should be considered. (J Manipulative Physiol Ther 2009;32:270-276)

Key Indexing Terms: Reproducibility of Results; Physical Therapy Modalities; Leg

The skeletal malalignments of the lower quarter and their correlated and compensatory motions and postures are commonly used to guide clinical examination and explain interventions for lumbar and lower extremity injuries. A problem with clinical implementation of the theory of compensatory motion is that clinical measures are predominately single plane and static, but the theory is based on multiaxial movement patterns and dynamic interactions among joints. Because many joints are involved, it is difficult to determine which joint malalignment has the most influence upon any compensatory motion.

Reliable measurement of all aspects of the lower quarter is the foundation for application of this theory. Some clinical techniques have been evaluated for reliability but many have not. Clinical texts sometimes reference the study of individual tests. In addition, small numbers of clinical tests have been grouped and evaluated together. However, few studies have examined the reliability of a large range of clinical assessments as evaluated by one group of testers. In practice, clinicians are expected to develop confidence in conducting many measures on one patient. Thus, the purpose of the present study was to determine the intrarater and interrater reliability of a wide range of common clinical measures as conducted on the same subject pool by a group of trained examiners.

We selected 22 postural and lower extremity measures for psychometric testing because of their widespread use in clinical evaluation and their use in measuring various attributes of the lower quarter. The measures selected include spinal posture assessment in the frontal and sagittal planes, the Schober test of lumbar spine flexibility, pelvis width (via anterior superior iliac spine [ASIS] width), pelvic inclination in the frontal and sagittal planes, Ober’s test, Patrick’s test, Thomas test, Trendelenburg test, Q-angle measurement, sit and reach test, straight leg raise, leg length measurement, and genu varum/valgum assessment. All of these tests were performed as described in either a clinical orthopedic text or according to descriptions found in relevant literature.

Methods

Design Overview

We used a single group repeated measures research design. All procedures in this study were approved by the human subjects committee before collection of any data.