

A Biomechanical Analysis of the Clinical Stability of the Lumbar and Lumbosacral Spine

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Eighteen Functional Spinal Units (FSU), representing three levels of human lumbar and lumbosacral spine, were tested using preload forces that corresponded to the clinical situation of a person lying supine or standing while subjected to maximum physiologic flexion or extension forces. Sagittal plane displacements were measured using linear variable differential transformers (LVDTs) and a MINC-11/03 minicomputer. Sequential transection of components in the posterior-to-anterior and anterior-to-posterior directions until failure occurred allowed measurements of the displacement sagittal plane translation and rotation of the intact and transected FSU.