Quantitative assessment of the motion of the lumbar spine in the low back pain population and the effect of different spinal pathologies of this motion

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There are few objective means by which disability caused by low back pain (LBP) can be quantified. The purpose of this study was to investigate the usefulness of motion measurements in the assessment of LBP. The motion characteristics of 138 LBP subjects were investigated, and the data compared with a previously published database of normal subjects. Values of range of motion and angular velocity were obtained for all subjects in each plane of motion. Analysis of these motion characteristics demonstrated significant differences ($P < 0.0001$) between the two populations; however both populations demonstrated considerable intersubject variation. Multiple regression analysis revealed that some of the variance in the LBP population was attributable to the underlying diagnosis. Patients with a spondylolisthesis tended to be hypermobile whilst those with spinal stenosis, disc prolapse or degenerative disc disease tended to be hypomobile. All diagnostic groups showed impairments in their velocity characteristics.