THE RELATIONSHIP BETWEEN SPINAL POSTURE AND PHYSICAL CHARACTERISTICS IN AN INDUSTRIAL LOW BACK PAIN POPULATION

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Study design
Cross-sectional study

Objectives
This study was undertaken to determine if there were measurable relationships between posture, back muscle endurance and low back pain in industrial workers.

Summary of background data
It has been shown that there is a close relationship between adopting passive postures and reduced activation of the spinal stabilising muscles. Clinical reports state that subjects with flexion pain disorders of the lumbar spine commonly adopt passive postures such as slump sitting or sway standing, and present with associated dysfunction of the spinal stabilising musculature. However, to date there is little empirical evidence to support that patients with back pain, posture their spines differently than pain free subjects.

Methods
Subjects included 21 healthy industrial workers and 24 industrial workers with a history of low back pain related to flexion postures or flexion movements of the lumbar spine. Groups were matched for physical work conditioning. Lifestyle information, lumbo-pelvic posture in sitting, standing and lifting, and back muscle endurance were measured to determine relationships between posture, back muscle endurance and low back pain.

Results
Low back pain subjects had significantly reduced back muscle endurance (p<0.01), and this measure was a predictor of low back pain (75.6% confidence). Low back pain subjects sat with less hip flexion, (p=0.05), suggesting increased posterior pelvic tilt in sitting. Low back pain subjects were significantly closer to their end of range lumbar flexion angle in 'usual' sitting than the healthy controls (p<0.05). There were strong correlations between reduced back muscle endurance and sitting with the lumbar spine nearer end of range flexion, as well as sitting with increased posterior pelvic tilt. Correlations between increased time spent sitting, leisure time inactivity and back muscle endurance were also identified. There were no significant differences found between the groups for the standing and lifting posture measures.
Conclusions
These findings support that reduced back muscle endurance, sitting postures with increased posterior pelvic tilt and sitting postures with the spine near end of range flexion can be associated with low back pain involving flexion related pain disorders of the lumbar spine in industrial workers. These results support a relationship between spinal posture and low back pain.

References