

Movement and muscle activation patterns following medial branch blocks for facet joint pain, and sacroiliac injections for sacroiliac joint pain

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BACKGROUND

Many studies have documented an association between chronic low back pain (LBP) and diminished muscular performance capacity. However, few studies have quantified the changes in these measures following interventions using objective measurement techniques or related them to changes in clinical outcome. A previous study compared the effects of active physiotherapy, muscle reconditioning devices, or low-impact aerobics on back muscle function in LBP patients. Significant changes in muscle performance were observed in all groups, due to presumed changes in neural activation of the lumbar muscles and psychological changes such as pain tolerance. Given the impact of pain tolerance on muscle performance, we aim to assess movement and EMG muscle activity before and after a pain relieving nerve block. The aim of this study is to document the changes in movement, posture and muscle activation patterns following medial branch blocks (MBB) for facet joint related back pain, and sacroiliac joint (SIJ) injection for sacroiliac joint related back pain.

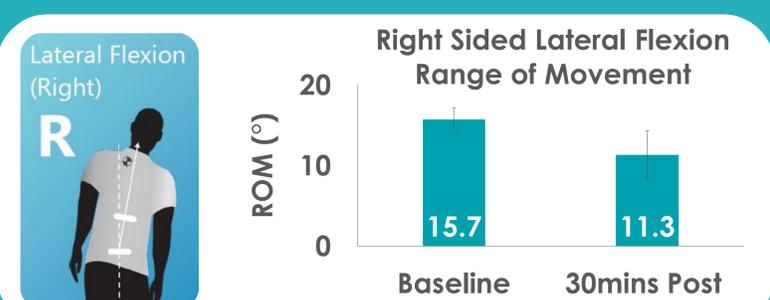
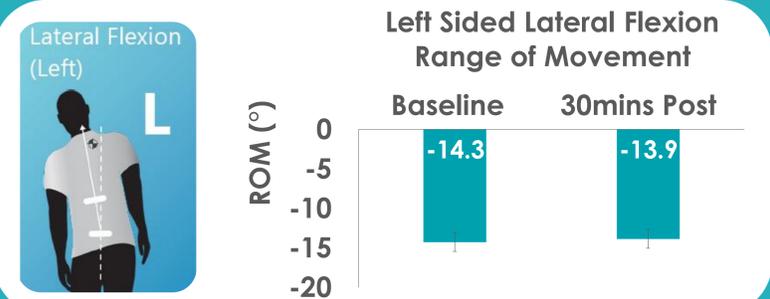
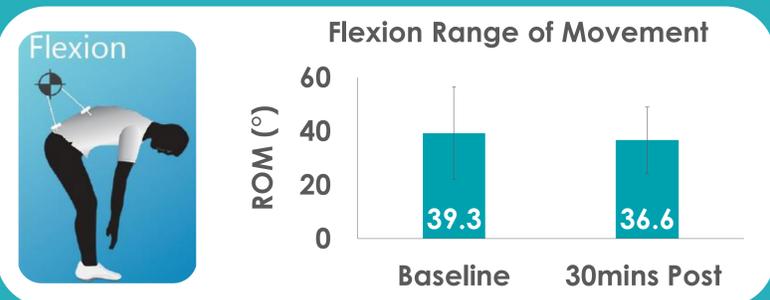
METHOD

The ViMove DorsaVi motion sensor was used to measure movement in three directions (Flexion, Lateral Flexion and Extension), muscle activity around the lumbar spine and vibration affecting the lumbosacral region. Patients undergoing medial branch blocks for facet joint related back pain or sacroiliac joint block injections for sacroiliac related back pain, underwent ViMove assessment prior to and 30 minutes following their nerve block procedure. Pain, pre (baseline) and at 30mins post block was measured using the numerical pain rating scale (NRS). Patients reporting >75% pain relief at the 30min time point post block were classified as positive responses, and therefore were included in the final analysis (MBB: n=13; SIJ: n=10). Data collected was IRB approved and statistical analysis performed.

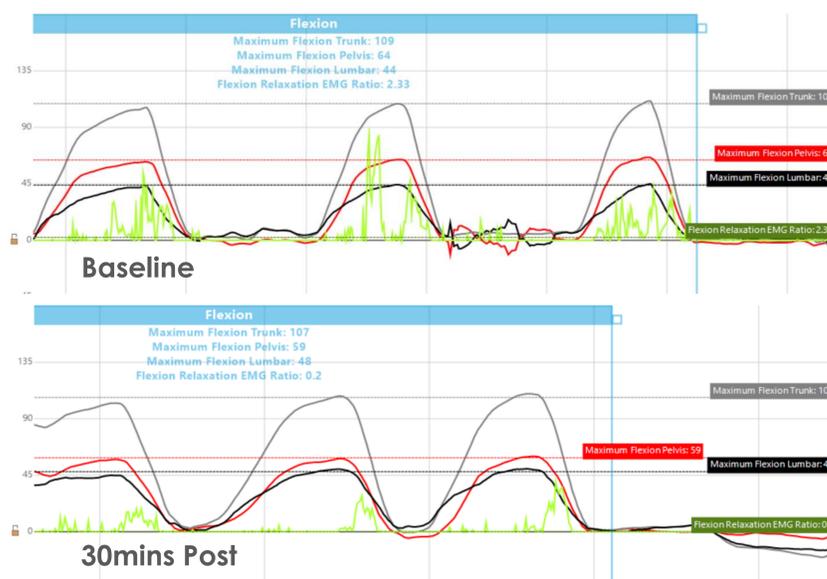
Demographics

	Lumbar Medial Branch Block Group (n=13)	Sacroiliac Joint Block Group (n=10)
Age	51.6 ± 14.0 years	59.3 ± 14.9 years
Baseline Pain (NRS)	5.5 ± 1.1	6.5 ± 2.1
Post Block Pain (NRS)	0.6 ± 0.5	1.1 ± 0.6

(mean±SD)



Lumbar Flexion EMG Activity is Reduced following blocks



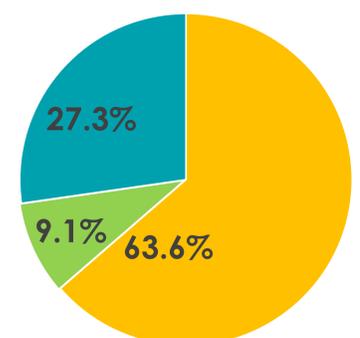
Representative Live Assessment Motion Profiles.

The assessment profile demonstrates EMG activity in green. Also shown is trunk flexion (grey), pelvic flexion (red) and lumbar flexion (black) which is the calculated difference between trunk and pelvic flexion.

Reduced EMG can be observed in the second profile, whilst flexion remains consistent.

Over 63% of patients reported a decrease in EMG activity post block

- Decreased EMG Activity
- Increased EMG Activity
- No Change to EMG Activity



SUMMARY

Chronic Pain is thought to negatively impact on muscular performance. At 30mins post block, patients reported similar range of movements (ROM), but noticeable decreases in EMG activity.

Type of nerve block did not impact on outcomes.

Given that reduced EMG activity represents lower electrical activity required for muscle activation, we demonstrated a reduced EMG pattern in the absence of pain, perhaps demonstrating a more efficient muscle contraction.

Disclosures: Technical Support received from DorsaVi

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