

NORMALISATION OF ABERRANT MOTOR PATTERNS IN SUBJECTS WITH SACROILIAC JOINT PAIN FOLLOWING A MOTOR LEARNING INTERVENTION: A MULTIPLE SUBJECT CASE STUDY INVESTIGATING THE ASLR TEST

O'Sullivan, PB, PhD, Beales, DJ, Avery, AF
Curtin University of Technology
School of Physiotherapy
Selby Street
Shenton Park WA 6008
tosulliv@cc.curtin.edu.au

BACKGROUND

Alterations in respiratory patterns, as well as diaphragm and pelvic floor kinematics have been reported, in subjects with a clinical diagnosis of sacroiliac joint pain (SIJP), during the active straight leg raise (ASLR) test. To date no evidence exists as to whether these patterns can be altered by motor learning interventions nor whether this intervention results in reduction in pain and disability.

METHODS

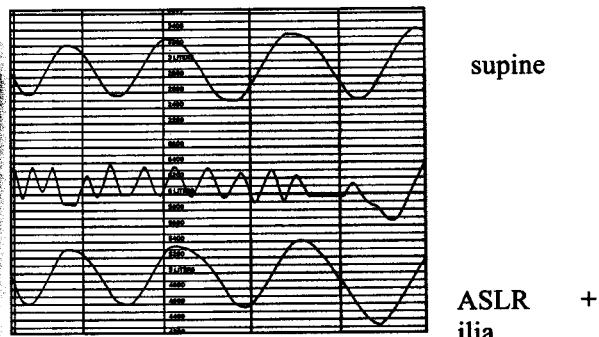
Nine subjects with SIJP with a positive active SLR underwent a motor learning intervention. This was directed at training the 'lifting' contraction of the pelvic floor muscles in co-contraction with the deep abdominal muscles and lumbar multifidus, with controlled respiration. This training was initiated in non-weight bearing positions, with the use of trans abdominal ultra-sound to provide biofeedback training to accurately facilitate a lifting contraction of the pelvic floor muscles. The training was then integrated into weight bearing positions and previously provocative functional tasks.

Diaphragm and pelvic floor kinematics were measured with ultrasonography during resting supine, ASLR and ASLR with the addition of pelvic compression. Spirometry was utilized to record breathing patterns. Pain intensity and functional disability levels were monitored. All measures were recorded pre- and post- a 10 week intervention.

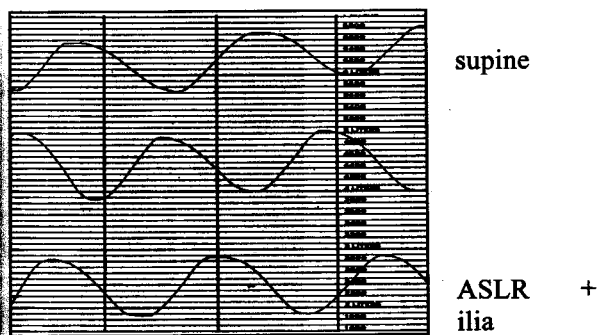
RESULTS

Normalization of diaphragmatic and pelvic floor kinematics was observed during the ASLR following the intervention. Visual inspection of respiratory patterns demonstrated marked improvement with a trend towards a normalization of respiratory rate and minute ventilation. Reductions in pain intensity and functional disability levels were noted following the intervention. Subjective reports of reduced stress and urge incontinence were also noted.

Figure 1: Spirometry traces for a subject with SIJ pain at rest, during ASLR and ASLR with ilium compression: a) pre-intervention - note disrupted respiration during ASLR and normalization of the respiration with ilium compression b) post-intervention - note normalization of respiration during ASLR following motor learning intervention.



b)



CONCLUSION

The findings of this study demonstrate that a motor learning exercise approach as employed in this study is capable of normalizing aberrant motor control patterns in subjects with SIJP and a positive ASLR, with resultant reductions in pain and disability. It is hypothesized that these findings represent enhanced load transfer within the lumbo-pelvic region, in these subjects following the intervention, during the ASLR. It is proposed that the pelvic floor muscles may provide a key role in the provision of force closure for the lumbo-pelvic region. Further research including randomized controlled clinical trials are required to further substantiate these findings.