OXYGENATION OF THE PARAVERTEBRAL MUSCLES OF THE LOWER BACK IN HEALTHY CONTROLS AND PATIENTS WITH CHRONIC LOW BACK PAIN

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Study Design A cross-sectional comparative study between healthy controls and a subgroup of nonspecific chronic low back pain (NSCLBP) patients.

Background Individuals with low back pain sometimes have different movement characteristics than healthy individuals. Movement control impairment is a subgroup of low back pain. Little evidence exists to confirm that NSCLBP patients with movement control impairment show different oxygenation than healthy subjects and these processes are still poorly understood.

Objective To determine whether erector spinae muscle oxygenation differs during movement control testing between healthy subjects and subjects with NSCLBP.

Methods 20 healthy subjects and 12 subjects with nonspecific chronic low back pain and movement control impairment performed three movement control tests using near infrared spectroscopy (NIRS). NIRS based physiological changes of oxygenation were calculated as the difference in the active period between the two groups. Measurements were taken at the centre of the erector spinae at the level of L3 bilateral. NIRS was measured to determine the level of oxygenation. It was hypothesized that even at moderate levels of activation, low back muscles would show a clearly contrasting oxygenation level between these two subject groups.

Results The results obtained from NIRS demonstrate that although a clear signal can be obtained no difference exists between these two subject groups.

Conclusion NIRS appears to be a good non-invasive technology to display muscle oxygenation during various low level activation. The findings in this study suggest that NSCLBP subjects with movement control impairment present no impairment in their capacity to deliver oxygen at the level of L3 of the erector spinae muscle