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# Comparative Effects of Dynamic Neuromuscular Stabilization Exercises on Lumbar Proprioception, Movement Control and Functional Activity Limitation in Movement Control Impairment Subgroup of Non-Specific Chronic Low Back Pain: RCT Interim Analysis

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## Abstract

**Background:** Previous evidence suggests that in a MCI subgroup of NSCLBP patients, maladaptive and uncontrolled lumbar movement control, along with impaired proprioception, mechanically contribute to the persistence of low back pain. This study presents the interim comparative outcomes of progressive dynamic neuromuscular stabilization (DNS) exercises with generally recommended strengthening and flexibility exercises (SFE) on lumbar proprioception, movement control, and patient-specific functional activity limitation.

**Methods:** A total of 40 NSCLBP patients specific to the MCI subgroup were randomly assigned to experimental DNS (n = 20; age: 28.95 ± 6.43 years) or control SFE (n = 20; age: 28.25 ± 6.15 years) groups. 30-45 minutes of group-specific exercises were given, preferably for 3 to 5 days every week, for a total of 6 weeks or 30 sessions altogether in consecutive weeks. The active lumbar repositioning error test, Luomajoki MCI test battery, and Patient Specific Functional scale (PSFS) were used to examine lumbar spine proprioception, movement control, and patient-specific functional activity limitation, respectively.

**Results:** Both groups showed baseline homogeneity in terms of patients' body characteristics and measured outcomes. Within and between-group comparative analysis showed significant differences in all measured outcomes of DNS group ($p < 0.05$). Whereas, the SFE group showed a non-significant difference in lumbar proprioception (repositioning error).

**Conclusion:** The interim findings of this study show that the DNS program has a significant impact by decreasing lumbar repositioning error and movement control impairment while improving patient-specific functional abilities with a notable mean percentage change as compared to the SFE program.

***Keywords:*** *Non-Specific Chronic Low Back Pain (NSCLBP); Dynamic Neuromuscular Stabilization (DNS); Movement Control Impairment (MCI).*