

## The Effect of Proprioceptive Neuromuscular Facilitation and Lumbar Stabilization Exercises on Muscle Strength and Muscle Endurance in Patients with Lumbar Disc Hernia

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**Abstract :** The aim of this study is to investigate the effect of lumbar stabilisation and proprioceptive neuromuscular facilitation (PNF) training on muscle strength and muscle endurance. The participants were 64 between the ages of 15-69 ( $53.04 \pm 14.59$ ), who were graded protrusion and bulging lumbar herniation according to 'Macnab Classification'. The participants were divided into four groups as each group had 16 participants: lumbar stabilisation training, PNF training, physical therapy and control groups. Sociodemographic features were recorded. Then their muscle strength tests (by isokinetic dynamometer (Cybex 770 Norm Lumex Inc, Ronkonkoma, NY, USA) were recorded. Before and after applications; visual analogue scale (VAS), Oswestry Disability Index were applied by a physical therapist. The participants in lumbar stabilisation group performed 45 minutes, 5 days in a week for 4 weeks strength training with a physical therapist observation. The participants in PNF group performed 5 days in a week for 4 weeks with pelvic patterns of PNF by a physiotherapist. The participants in physical therapy group underwent Hotpack, Tens and Ultrasound therapy 5 days in a week for 4 weeks. The participants in control group didn't take any training programme. After 4 weeks, the evaluations were repeated. There were significant increases in muscle strength and muscle endurance in lumbar stabilization training group. Also in pain intensity at rest and during activity in this group and in Oswestry disability index of patients, there were significant improvements ( $p < 0.05$ ). In PNF training group likewise, there were significant improvements in muscle strength, muscle endurance, pain intensity at rest and with activity and in Oswestry disability index ( $p < 0.05$ ). But improvements in the Lumbar Stabilization group was better than PNF Group. We found significant differences only in pain intensity at rest and with activity and in Oswestry disability index ( $p < 0.05$ ). in the patients in Physical Therapy group. We think that appropriate physiotherapy and rehabilitation program which will be prepared for patients, to protect the waist circumference of patients with low muscle strength and low muscle endurance will increase muscle strength and muscle endurance. And it is expected that will reduce pain and will provide advances toward correcting functional disability of the patients.

**Keywords :** disc herniation, endurance, lumbar stabilisation exercises, PNF, strength

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