

## THE EFFECT OF EARLY ISOLATED LUMBAR EXTENSION EXERCISE PROGRAM FOR PATIENTS WITH HERNIATED DISC UNDERGOING LUMBAR DISCECTOMY

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**OBJECTIVE:** To determine the effects of a postoperative early isolated lumbar extension muscle-strengthening program on pain, disability, return to work, and power of back muscle after operation for herniated lumbar disc.

**METHODS:** Seventy-five patients were randomized into an exercise group (20 men, 15 women) and a control group (18 men, 22 women) to perform a prospective controlled trial of a lumbar extension exercise program in patients who underwent lumbar microdiscectomy or percutaneous endoscopic discectomy. Six weeks after surgery, patients in the exercise group undertook a 12-week lumbar extension exercise program. The assessment included measures of lumbar extensor power by the MedX (Ocala, FL) lumbar extension machine, muscle mass of multifidus and longissimus (L4–L5 cross-sectional area) by computed tomography. All patients completed the visual analog scale and the Oswestry disability index to assess pain and disability, respectively. Return to work data were also investigated.

**RESULTS:** After the exercise program, significant improvements were observed in the exercise group versus the control group for lumbar extensor power (51.67% versus 17.55%, respectively;  $P < 0.05$ ), the cross-sectional area of multifidus and longissimus muscle (29.23% versus 7.2%, respectively;  $P < 0.05$ ), and the visual analog scale score (2.51 versus 4.30, respectively;  $P < 0.05$ ). The percentages of returning to work within 4 months after surgery were significantly greater in the exercise group than in the control group (87% versus 24%, respectively). Although this was not statistically significant ( $P > 0.05$ ), the Oswestry disability index scores in the exercise group were better than that in control group (24.6 versus 30.6, respectively).

**CONCLUSION:** These results support the positive effects of the postoperative early lumbar extension muscle-strengthening program on pain, return to work, and strength of back muscles in patients after operation of herniated lumbar disc.

**KEY WORDS:** Computed tomography cross-sectional area of multifidus and longissimus, Lumbar disc herniation, Lumbar extensor muscle exercises, Lumbar extensor muscle power

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Lumbar discectomy for prolapsed intervertebral disc is one of the most dramatic operations with gratifying results. With the progress made by science in the pathophysiology of disc herniations and imaging technologies and also the availability of various new treatment methods, the management of prolapsed intervertebral disc has been revolutionized. Still with so many new developments, the outcome of operations for disc herniations has not been 100%, and many patients still do not have satisfactory outcomes and continue to have some persisting symptoms. Approximately 80% of the patients return to work 12 months after surgery

(34), whereas the remaining 20% do not. The reasons are varied and include the selection of patients, psychosocial aspects, and the variability in the spectrum of degenerative disc disease. But postoperative rehabilitation also has a considerable influence on the surgical results. A lumbar extension exercise program can be beneficial for strengthening the lumbar extensors and thus may improve the outcome in such patients. The objective of this study was to determine the effects of a lumbar extension exercise program on pain, disability, return to work, and power of the back muscle after lumbar discectomy. This is the first such study to provide