

## ***A RANDOMISED CLINICAL TRIAL OF THREE REHABILITATION PROGRAMS FOR THE LUMBAR MULTIFIDUS IN PATIENTS WITH CLBP***

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### ***INTRODUCTION***

In chronic low back pain (CLBP) patients, a selective atrophy of the lumbar multifidus (MF) was found. Since the MF is thought to be particularly important to segmental stability, atrophy could permit spinal instability and contribute to the high recurrence rate in chronic low back pain. Therefore, the most successful method to restore the volume of this muscle must be identified.

A randomized clinical trial, test-retest design, with a 12-month questionnaire follow-up was conducted to determine the efficacy (pain relief, short and long-term functional outcome) and the effect on the cross-sectional area (CSA) of the MF, of three different training schedules in patients with CLBP.

### ***METHODS***

CLBP patients were randomly assigned to three programs: 10-week stabilization training (group I, N = 23), 10-week stabilization training combined with dynamic resistance training (group II, N = 23) and 10-week stabilization training combined with dynamic-static resistance training (group III, N = 25). Prior to and after 10 weeks of training, the CSA of the MF was determined from standard CT images at three different levels (upper endplate of L3 and L4, and lower endplate of L4). Pain relief, and short and long-term functional outcome were evaluated.

### ***RESULTS***

Comparing pre-post training, the CSA of the multifidus statistically increased in group III at all levels. In contrast, no statistical differences over time were found in group I and II. Comparing the increases in CSA during the study, a statistical significant greater increase was observed in group III compared to group I and II. Afterwards, all groups showed a statistically significant reduction in pain and functional disability levels, with no statistically significant difference among the three groups. During the 12-month follow-up the self-reported disability statistically increased in the stabilization group, whereas long-term gains were achieved with both strengthening programs.

## **CONCLUSIONS**

The results of this study suggest that stabilization exercises and dynamic intensive lumbar resistance training have no significant effect on the CSA of the lumbar multifidus in CLBP patients. The static holding component, between the concentric and eccentric phase was found to be critical in inducing muscle hypertrophy during the first 10 weeks. On the basis of the short-term pain and disability improvements all of the treatments were equally beneficial. On the basis of the long-term disability level, the combination of stabilization exercises and intensive lumbar resistance training was advised, independently of the dynamic or dynamic-static modality.