

The Correlation Between Gluteus Medius Strength and Lower Back Pain in Middle-Aged Adults: A Critically Appraised Topic



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INTRODUCTION

Low back pain is one of the most common complaints of middle-aged individuals. Low back pain tends to be the result of a more sedentary lifestyle and even for those who are active, normal biomechanics can often neglect activation of the Gluteus Medius muscle. Therefore, it is important to determine appropriate means of preventing this lower back pain with the thought that there is a correlation between the Gluteus Medius and lower back pain.

OBJECTIVES

- Are Gluteus Medius strengthening programs effective in decreasing low back pain in adults?
- Does weakness of the Gluteus Medius affect the presence of low back pain in middle-aged adults?

METHODS

All articles investigated Gluteus Medius strength in comparison to the patient's pain.

- Cooper et al. studied manual muscle tests of the Gluteus Medius, TFL, and Gluteus Maximus in correlation to patient reported low back pain.
- Jeoung et al. targeted lumbar stabilizing muscles plus strengthening the muscles of the gluteus using biofeedback response on patient reported low back pain.
- Penny et al. included manual muscle tests and SLS to determine weakness and correlation between weakness and patient reported low back pain.

RESULTS

Study Authors	Cooper et al.	Jeoung et al.	Penny et al.
Study Design/Year	Cohort, 2015	RCT, 2015	Cohort, 2014
Participants	150 patients with LBP, Patients were matches with controls (no LBP or <3 months w/o LBP) similar in intervention group.	40 F with LBP between 30-50 YO. Each participant was randomly selected and put into two groups	Participants with nonspecific chronic LBP (CLBP) were included. Members of the control group age and sex matched (with in 5y).
Interventions	Gluteus Medius, TFL, and Gluteus Maximus MMT and a Trendelenburg sign were used to assess strength of hip muscles. Tenderness was assessed as reproduction of pain with palpation under blanched fingernail.	For lumbar stabilization group, lumbar in neutral, lumbar stabilization muscles were contracted. For the strengthening gluteal muscles and lumbar stabilization group, exercises to strengthen gluteal muscles were added.	Right and left Gluteus Medius strength was assessed using a Lafayette Manual Muscle Tester. Each participant performed 1 repetition of the SLS test on the right and left sides and were asked to flex 1 hip between 60 and 90 and maintain this position for 30 seconds.
Outcome Measures	A significant decrease in Gluteus Medius strength was observed for the Affected. Gluteal tenderness was more prevalent on the affected side (68.1 %). The presence of LBP was Gluteus Medius weakness and low back tenderness. The strongest contributor was Gluteus Medius weakness	The lumbar disability index changed by 9.9±3.2 in the SMG+LSE group and by 4.5±2.4 in the LSE group. Isometric muscle strength with lumbar extension changed by 30.6±17.4 in the SMG+LSE group and by 15.7± 14.7 in the LSE group.	Individuals in the CLBP group exhibited significant weakness in the Gluteus Medius, more pain, and back-related disability compared with controls.
Main Findings	Gluteus Medius are weaker in people with LBP compared to controls or the unaffected side.	Comparison of the changes in the two groups revealed that there was a more significant effect on low back pain index, lumbar muscle strength, and balance in the SMG+LSE group than in the LSE group.	This study found that people with CLBP had weaker bilateral Gluteus Medius muscles than age- and sex-matched individuals without LBP.
Level of Evidence	Grade B, 2b	Grade B, 1b	Grade B, 2b
Support for Answer	Yes	Yes	Yes

CONCLUSION

There is moderate evidence to support the efficacy of strengthening the Gluteus Medius to improve low back pain in individuals 30-50 years of age. One study investigated symptoms including Gluteus Medius weakness and tenderness in people with chronic low back pain, one studied the difference between lumbar strengthening exercises and the gluteus group with the lumbar strengthening exercises in relation to chronic low back pain, and one studied to identify the relation between strength of the Gluteus Medius to low back pain

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