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**Brage et al.** Pain education combined with neck- and aerobic training is more effective at relieving chronic neck pain than pain education alone - A preliminary randomized controlled trial. *Manual Therapy* 2015;20:686-693.

**Summary:** The results from this study show that the combination of pain education and exercise based treatment creates better outcome for chronic neck pain patients than pain education alone.

**Abstract:** OBJECTIVE: To evaluate the effect of training and pain education vs pain education alone, on neck pain, neck muscle activity and postural sway in patients with chronic neck pain.

METHODS: Twenty women with chronic neck pain were randomized to receive pain education and specific training (neck/shoulder exercises, balance and aerobic training) (INV), or pain education alone (CTRL). Effect on neck pain, function and Global Perceived Effect (GPE) were measured. Surface electromyography (EMG) was recorded from neck flexor and extensor muscles during performance of the Cranio-Cervical Flexion Test (CCFT) and three postural control tests (two-legged: eyes open and closed, one-legged: eyes open). Sway parameters were calculated.

RESULTS: Fifteen participants (CTRL: eight; INV: seven) completed the study. Per protocol analyses showed a larger pain reduction ( $p = 0.002$ ) for the INV group with tendencies for increased GPE ( $p = 0.06$ ), reduced sternocleidomastoid activity during the CCFT ( $p = 0.09$ ), reduced sway length ( $p = 0.09$ ), and increased neck extensor activity ( $p = 0.02$ ) during sway compared to the CTRL group.

CONCLUSION: Pain education and specific training reduce neck pain more than pain education alone in patients with chronic neck pain. These results provide encouragement for a larger clinical trial to corroborate these observations.

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**Cooper et al.** Prevalence of gluteus medius weakness in people with chronic low back pain compared to healthy controls. *European Spine Journal* 2015 May 26. [Epub ahead of print]

**Summary:** The findings in the present study demonstrate a clear correlation between long-term non-specific LBP and gluteus medius weakness on the symptomatic side. The authors suggest that assessment and treatment of gluteus medius could be of advantage in people suffering from long term LBP.

**Abstract:** PURPOSE: Clinical observation suggests that hip abductor weakness is common in patients with low back pain (LBP). The purpose of this study is to describe and compare the prevalence of hip abductor weakness in a clinical population with chronic non-specific LBP and a matched sample without LBP.

METHODS: One hundred fifty subjects with chronic nonspecific LBP and a matched cohort of 75 control subjects were recruited. A standardized back and hip physical exam was performed. Specifically tensor fascia lata, gluteus medius, and gluteus maximus strength were assessed with manual muscle testing. Functional assessment of the hip abductors was performed with assessment for the presence of the Trendelenburg sign. Palpation examination of the back, gluteal and hip region was performed to try and reproduce the subject's pain complaint. Friedman's test or Cochran's Q with post hoc comparisons adjusted for multiple comparisons was used to compare differences between healthy controls and people with chronic low back pain for both the affected and unaffected sides. Mann-Whitney U was used to compare differences in prevalence between groups. Hierarchical linear regression was used to identify predictors of LBP in this sample.

**RESULTS:** Gluteus medius is weaker in people with LBP compared to controls or the unaffected side (Friedman's test,  $p < 0.001$ ). The Trendelenburg sign is more prevalent in subjects with LBP than controls (Cochran's Q,  $p < 0.001$ ). There is more palpation tenderness over the gluteals, greater trochanter, and paraspinals in people with low back pain compared to controls (Cochran's Q,  $p < 0.001$ ). Hierarchical linear regression, with BMI as a covariate, demonstrated that gluteus medius weakness, low back regional tenderness, and male sex were predictive of LBP in this sample.

**CONCLUSION:** Gluteus medius weakness and gluteal muscle tenderness are common symptoms in people with chronic non-specific LBP. Future investigations should validate these findings with quantitative measures as well as investigate the effect of gluteus medius strengthening in people with LBP.

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## **Lückens et al.** Using ultrasound to assess the thickness of the transversus abdominis in a sling exercise. *BMC Musculoskeletal Disorders* 2015;16:203.

**Summary:** This study shows that the prone lumbar setting is effective at increasing activity in transversus abdominis, and thus supports the clinical intentions with this technique.

**Abstract:** **BACKGROUND:** Activation of the deep stabilizing trunk muscle transversus abdominis (TrA) is important for trunk stabilization and spine stability. Sling exercises are used for the activation of trunk muscles, therefore we determined the thickness of the TrA in a standardized sling exercise in comparison to rest and abdominal press. Furthermore we propose a standardized measurement method, which can be used to compare relative muscle thickness levels in different exercises.

**METHODS:** The main objective of the study was to assess and to compare the thickness of the TrA during different conditions; resting condition, sling exercise condition (non-voluntary contraction), and abdominal press condition (voluntary contraction) using a non-invasive ultrasound-based measurement method. Ultrasound measurement (USM; 8.9 MHz, B-mode) was employed to measure the thickness of the TrA in twenty healthy volunteers (13 m, 7 f), each one measured three times with breaks of 48 h. On each measurement day, the subjects were measured on three different conditions: resting condition (RC), sling condition (SC), and abdominal press condition (APC). The USM images were analyzed using a custom-made MatLab script, to determine the thickness of the TrA.

**RESULTS:** A two-way repeated-measurements ANOVA was performed with a significant effect of the factor condition [ $F(2,38) = 47.82$ ,  $p < 0.0001$ ,  $\eta^2 = 0.72$ ], no significant effect of the factor time [ $F(2,38) = 2.45$ ,  $p = 0.1$ ,  $\eta^2 = 0.11$ ], and no significant interaction effect [ $F(4,76) = 0.315$ ,  $p = 0.867$ ,  $\eta^2 = 0.02$ ]. Statistically corrected post-hoc t-tests revealed significant differences in TrA thickness showing that RC < SC ( $p < 0.001$ ;  $\eta^2 = 0.19$ ;  $d = 0.96$ ), SC < APC ( $p < 0.0001$ ;  $\eta^2 = 0.23$ ;  $d = 1.10$ ), RC < APC ( $p < 0.0001$ ;  $\eta^2 = 0.53$ ;  $d = 2.11$ ). As for the test-retest reliability the intra-class correlation coefficient (ICC) yielded a value of 0.71, 0.54, and 0.29, on the conditions RC, SC, and APC, respectively.

**CONCLUSIONS:** We showed that the investigated sling exercise can be used to significantly increase the TrA thickness, and that the TrA thickness was significantly different on the three conditions (RC, SC, APC) using the ultrasound-based method.

**You et al.** The effect of six weeks of sling exercise training on trunk muscular strength and endurance for clients with low back pain. *Journal of Physical Therapy Science* 2015;27:2591-2596.

**Summary:** This article concludes that sling based exercise is an effective approach to reduce pain and improve function in patients with long-term LBP.

**Abstract:** PURPOSE: The purpose of this study was to investigate the effects of 6 weeks sling exercise training for clients with low back pain on the levels of pain, disability, muscular strength and endurance.

SUBJECTS AND METHODS: Twelve chronic LBP subjects participated in this study. Subjects were randomly divided into a control group and a training group. Subjects in the training group performed sling exercise training for six weeks, and participants in the control group did not perform any exercise.

RESULTS: Pain, disability levels and muscular strength significantly improved in the training group, but not in the control group. The left multifidus showed a significant improvement in muscular endurance, measured as the slope of the median frequency after training.

CONCLUSION: Six weeks of sling exercise training was effective at reducing pain intensity, and improving the disability level and trunk muscular strength of subjects with low back pain.

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Redcord would like to thank you for the  
cooperation in 2015 and  
look forward to a prosperous new year!

