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Science & News

Lee et al. Effects of bridge exercise on trunk core muscle activity with respect to sling height and hip joint abduction and adduction.
Journal of Physical Therapy Science 2015;27:1997-1999.

Summary: The data from this study indicates that supine bridging performed with a rather high sling height and additional movement of the lower extremity in hip adduction is of advantage to increase activity of the transverse abdominis and erector spinae.

Abstract: PURPOSE: This study evaluated the effects of bridge exercise on trunk core muscle activity with respect to sling height and hip joint abduction and adduction.

SUBJECTS: Fifteen healthy adult males participated.

METHODS: In the bridge exercise, the height of the sling was set low or high during hip joint abduction and adduction. Electromyography was used to compare the differences between the muscle activities of the transverse abdominis, rectus abdominis, and erector spinae muscles.

RESULTS: The muscle activities of the transverse abdominis, rectus abdominis, and erector spinae were significantly higher in the high sling position. Furthermore, the activities of the transverse abdominis and erector spinae were significantly higher during hip joint adduction than abduction regardless of sling height.

CONCLUSION: A high sling height is the most effective intervention for increasing the muscle activities of the transverse abdominis and erector spinae muscles during hip joint adduction in a bridge exercise.

Kaur et al. Effects of lower extremity and trunk muscles recruitment on serratus anterior muscle activation in healthy male adults.
The International Journal of Sports Physical Therapy 2014;9(7): 924-937.

Summary: The results presented in this study show that the function of serratus anterior can be influenced by activating muscles of the lower extremity and the trunk region. Particularly if activated in a closed kinetic chain set-up.

Abstract: BACKGROUND: Poor activation of the serratus anterior (SA) muscle may result in abnormal shoulder rhythm, and secondarily contribute to impingement and rotator cuff tears. Sequential activation of the trunk, pelvis, and lower extremity (LE) muscles is required to facilitate the transfer of appropriate forces from these body segments to the upper extremity. Myofascial connections that exist in the body, and LE and trunk muscles (TM) activity may influence scapular and upper limb activity. The purpose of this study was to investigate the effect of simultaneous recruitment of the LE muscles and TM on the SA muscle activation when performing a forward punch plus (FPP) and six variations of the FPP exercise.

STUDY DESIGN: Experimental, within-subject repeated measures.

METHODS: Surface electromyographic (EMG) activity of the SA, latissimus dorsi, and external oblique muscles on the dominant side, bilateral gluteus maximus muscles, and contra-lateral femoral adductor muscles were analyzed in forward punch plus (FPP) movement and six variations in twenty one healthy male adults. The percentage of maximum voluntary isometric contraction (%MVIC) for each muscle was compared across various exercises using a 1-way repeated -measures analysis of variance with Sidak pair wise comparison as post-hoc test ($p < 0.05$).

RESULTS: Pairwise comparisons found that the EMG activity of the serratus anterior (SA) during the FPP with contralateral closed chain leg extension (CCLE), FPP with ipsilateral closed chain leg extension (ICLE), FPP with closed chain serape effect (CS), and FPP with open chain serape effect (OS) showed significantly higher EMG activity than the FPP.

CONCLUSIONS: Simultaneous recruitment of the lower extremity and trunk muscles increases the activation of the SA muscle during the FPP exercise.

CLINICAL RELEVANCE: Rehabilitation clinicians should have understanding of the kinetic chain relationships between the LE, the trunk, and the upper extremity while prescribing exercises. The results of this study may improve clinicians' ability to integrate the kinetic chain model in a shoulder rehabilitation program.

LEVEL OF EVIDENCE: 2b

Park and Kim. Clinical feasibility of cervical exercise to improve neck pain, body function, and psychosocial factors in patients with post-traumatic stress disorder: a randomized controlled trial.

Journal of Physical Therapy Science 2015;27:1369–1372.

Summary: This research project investigated how an exercise-based intervention in slings can be effective in treating patients suffering from post-traumatic stress disorder with additional neck pain. The researchers conclude that the effect of the treatment not only reduces neck pain and disability, but also improves the efficacy of psychological treatment on depression in these patients.

Abstract: **PURPOSE:** To investigate the effect of cervical exercise on neck pain, disability, and psychosocial factors in patients with post-traumatic stress disorder.

SUBJECTS: Thirty patients with post-traumatic stress disorder, who also complained of neck pain.

METHODS: The cervical exercise group (n = 15) participated in cervical exercises for 30 min, 3 times/week for 6 weeks, and the control group (n = 16) underwent conventional physical therapy alone, without exercise. The exercises were performed in the following order: cervical relaxation, local muscle stabilization, and global muscle stabilization using a sling system.

RESULTS: Compared to the control group, the cervical exercise group demonstrated significant decreases as follows: Visual analogue scale score, 4.2 vs. 1.0; Neck disability index, 3.9 vs. 1.9; and depression on the Symptom checklist-90-revised, 9.4 vs. 4.3 and on the Hopkins symptom checklist-25, 6.3 vs. 2.8. However, anxiety on the Symptom checklist-90-revised (3.1 vs. 1.3) was not significantly different. Effect sizes were as follows: Visual analogue scale score, 1.8; Neck disability index, 0.9; depression, 1.0; and anxiety on Symptom checklist-90-revised and Hopkins symptom checklist-25, 0.6 and 0.8, respectively.

CONCLUSION: Cervical exercise is effective in improving neck pain, disability, and efficacy of psychological treatment for depression in patients with post-traumatic stress disorder.

Nijs et al. Low Back Pain: Guidelines for the Clinical Classification of Predominant Neuropathic, Nociceptive, or Central Sensitization Pain. Pain Physician 2015;18: E333-E346.

Summary: This article proposes a classification system to determine whether a LBP patient is predominantly suffering from neuropathic pain, nociceptive pain, or if the pain experience is due to central sensitization.

Abstract: BACKGROUND: Low back pain (LBP) is a heterogeneous disorder including patients with dominant nociceptive (e.g., myofascial low back pain), neuropathic (e.g., lumbar radiculopathy), and central sensitization pain. In order to select an effective and preferably also efficient treatment in daily clinical practice, LBP patients should be classified clinically as either predominantly nociceptive, neuropathic, or central sensitization pain.

OBJECTIVE: To explain how clinicians can differentiate between nociceptive, neuropathic, and central sensitization pain in patients with LBP. Study Design: Narrative review and expert opinion.

SETTING: Universities, university hospitals and private practices.

METHODS: Recently, a clinical method for the classification of central sensitization pain versus neuropathic and nociceptive pain was developed. It is based on a body of evidence of original research papers and expert opinion of 18 pain experts from 7 different countries. Here we apply this classification algorithm to the LBP population.

RESULTS: The first step implies examining the presence of neuropathic low back pain. Next, the differential diagnosis between predominant nociceptive and central sensitization pain is done using a clinical algorithm.

LIMITATIONS: The classification criteria are substantiated by several original research findings including a Delphi survey, a study of a large group of LBP patients, and validation studies of the Central Sensitization Inventory. Nevertheless, these criteria require validation in clinical settings.

CONCLUSION: The pain classification system for LBP should be an addition to available classification systems and diagnostic procedures for LBP, as it is focused on pain mechanisms solely.

Bone and Joint Decade World Summit and the Norwegian Musculoskeletal Research Network Conference 2015

The 'Long-term follow-up (four to seven years) of 24 patients with chronic musculoskeletal disorders successfully treated with sling based, neuromuscular exercise therapy – Neurac,' has been accepted for poster presentation at the conference in Oslo the 8th and the 9th of October.

For more information about the conference please visit the following link: www.bjd2015.com

