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Science & News

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2011

Muceli S et al. Reduced force steadiness in women with neck pain and the effect of short term vibration. J Electromyogr Kinesiol 2011;21(2):283-90.

Summary:
Women with neck pain displayed an impaired ability to maintain a steady neck flexion force around a target value and this corresponded to a higher power force fluctuation at low frequencies. Local vibration of the neck (using Redcord Stimula) improved force steadiness in the patient group but had no influence in the asymptomatic subjects.

Abstract:
This study compares neck force steadiness in women with neck pain and controls and the way this is influenced by short term vibration of the neck. In the first experiment, 9 women with chronic neck pain and 9 controls performed 10-s isometric cervical flexion at 15 N. Intramuscular EMG was recorded from the sternocleidomastoid muscle. In the second experiment, 10 women with neck pain and 10 controls performed 10-s isometric cervical flexion at 25% of their maximal force before and after vibration to the neck (bursts of 50 Hz with duration 20, 40, 60 and 120 s). Surface EMG was acquired from the sternocleidomastoid and splenius capitis. In both experiments, force steadiness was characterized by the coefficient of variation (CoV) and the relative power in three frequency subbands (low: 0–3 Hz; middle: 4–6 Hz; high: 8–12 Hz) of the force signal. Women with neck pain exhibited decreased force steadiness (Exp 1: patients 3.9 ± 1.3%, controls 2.7 ± 0.9%, $P < 0.05$; Exp 2: patients 3.4 ± 1.2%, controls 1.7 ± 0.6%, $P < 0.01$) which was associated with higher power in the low-frequency band (patients 71.2 ± 9.6%, controls 56.7 ± 9.2%, $P < 0.01$). Following vibration, CoV (2.6 ± 1.1%, $P < 0.05$) and the power in the low-frequency band of the force signal decreased (63.1 ± 13.9%, $P < 0.05$) in the patient group. These effects were not present in controls. Motor unit behavior and surface EMG amplitude were similar between groups. In conclusion, women with neck pain have reduced force steadiness, likely due to alterations in Ia afferent input. Vibration, which modulates Ia afferent input, increases force steadiness in patients with neck pain.

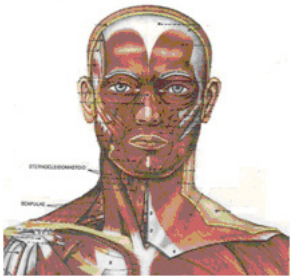
Huang JS et al. Sling exercise and traditional warm-up have similar effects on the velocity and accuracy of throwing. J Strength Cond Res 2011 Jan 27(Epub ahead of print)

Summary:
The study demonstrates equivalent performance effects observed in throwing accuracy and throwing velocity between sling exercise warm-up and Thrower's 10 warm-up. The study concludes that the sling exercise program provides an alternative to the traditional warm-up procedure in baseball players.

Abstract:
Throwing is a complex motion that involves the entire body and often puts an inordinate amount of stress on the shoulder and the arm. Warm-up prepares the body for work and can enhance performance. Sling-based exercise (SE) has been theorized to activate muscles, particularly the stabilizers, in a manner beneficial for preactivity warm-up, yet this hypothesis has not been tested. Our purpose was to determine if a warm-up using SE would increase throwing velocity and accuracy compared to a traditional, thrower's 10 warm-up program. Division I baseball players (nonpitchers) (16 men, age: 19.6 6 1.3, height: 184.2 6 6.2 cm, mass: 76.9 6 19.2 kg) volunteered to participate in this crossover study. All subjects underwent both a warm-up routine using a traditional method (Thrower's 10 exercises) and a warm-up routine using closed kinetic chain SE methods (RedCord) on different days separated by 72 hours. Ball velocity and accuracy measures were obtained on 10 throws after either the traditional and SE warm-up regimens. Velocity was recorded using a standard Juggs radar gun (JUGS; Tualatin, OR, USA). Accuracy was recorded using a custom accuracy target. An Analysis of covariance was performed, with the number of throws recorded before the testing was used as a covariate and p , 0.05 was set a priori. There were no statistical differences between the SE warm-up and Thrower's 10 warm-up for throwing velocity (SE: 74.7 6 7.5 mph, Thrower's 10: 74.6 6 7.3 mph $p = 0.874$) or accuracy (SE: 115.6 6 53.7 cm, Thrower's 10: 91.8 6 55 cm, $p = 0.136$). Warming up with SE produced equivalent throwing velocity and accuracy compared to the Thrower's 10 warm-up method. Thus, SE provides an alternative to traditional warm-up.

Falla D et al. Association between intensity of pain and impairments in onset and activation of the deep cervical flexors in patients with persistent neck pain. Clin J Pain 2010 Dec 20. (Epub ahead of print)

Summary:
The study showed an association between the intensity of neck pain and impairment in the onset and activation of the deep cervical flexors in patients with persistent neck pain. These findings may partially explain the heterogeneity in motor control impairments in individuals with neck pain.



Abstract:
Objectives: This study evaluates the relationship between clinical symptoms and the function of the deep cervical flexor muscles in women with persistent neck pain. Methods: Thirty-two women with a history of neck pain more than 6 months participated in the study. Measures for neck pain area, intensity, duration, and perceived disability were taken. Electromyography was acquired from the deep cervical flexor muscles by a nasopharyngeal electrode suctioned over the posterior oropharyngeal wall as the patients performed 2 tasks: rapid arm movements (shoulder flexion and extension) and isometric craniocervical flexion contractions. Results: The patients' average score for the Neck Disability Index (0 to 50) was 11.0±2.6 and their average pain intensity rated on a visual analog scale (0 to 10) was 4.7±1.8. A correlation was observed between the average intensity of pain rated on the visual analog scale and the normalized electromyography amplitude recorded from the deep cervical flexors during the craniocervical flexion contractions (r=_0.36; P<0.05). Furthermore, the relative onset of the deep cervical flexors during rapid shoulder flexion was positively correlated with the average intensity of pain (r=0.50; P<0.01). No significant correlations were identified between the amplitude and the onset of activation of the deep cervical flexors and the duration of pain, area of pain, or Neck Disability Index score of the patient. Discussion: This study shows a relationship between the levels of neck pain intensity and the function of the deep cervical flexor muscles in women with persistent neck pain but not in other clinical features, such as location or duration of the disorder. These findings may partially explain the heterogeneity in motor control impairments in patients with neck pain.

Ludewig PM, Braman JP. Shoulder impingement: Biomechanical considerations in rehabilitation. Manual Therapy 2011;16(1):33-9

Summary:
The study concludes that therapeutic exercise can reduce pain and improve function, but exercise protocols vary widely. The authors believe it is important to consider current biomechanical evidence when rehabilitating patients presenting with shoulder pain and abnormal movement patterns.

Abstract:
Shoulder impingement is a common condition presumed to contribute to rotator cuff disease. Impingement can occur externally with the coracoacromial arch or internally with the glenoid rim. Normal scapulothoracic motions that occur during arm elevation include upward rotation, posterior tilting, and either internal or external rotation. These scapulothoracic motions and positions are the result of coupled interactions between sternoclavicular and acromioclavicular joints. The sternoclavicular and acromioclavicular joints both contribute to scapulothoracic upward rotation. Posterior tilting is primarily an acromioclavicular joint motion. The sternoclavicular and acromioclavicular joint motions offset one another regarding final scapulothoracic internal/external rotation position. This manuscript discusses these coupled interactions in relation to shoulder muscle function. Two case examples are presented to demonstrate application of understanding these interactions and potential mechanisms of movement abnormalities in targeting treatment interventions for movement based subgroups of impingement patients.

Sung PS et al. Lumbar spine stability for subjects with and without low back pain during one-leg standing test. SPINE 2010 ;35(16): 753-60

Summary:
The study suggest that decreased spinal flexibility of LBP subjects might limit the coordination of postural adjustability, which is the composite output of visual and proprioceptive feedback. Therefore, proprioceptive feedback training might be beneficial since postural sway has been associated with low back symptoms.

Abstract:
Study Design. An experimental design comparing kinematic changes in the lumbar spine axis in subjects with and without low back pain (LBP) while standing on one leg with and without visual feedback. Objective. The purpose of this study was to evaluate the lumbar stability index, which includes relative holding time (RHT) and relative standstill time (RST), in subjects with and without LBP. Summary of Background Data. Even though a number of studies have evaluated postural adjustments based on kinematic changes in subjects with LBP, lumbar spine stability has not been examined for abnormal postural responses with visual feedback. Methods. All participants were asked to maintain the stork test position (standing on one leg with the contra lateral hip flexed 90°) for 25 seconds. The outcome measures included RHT and RST for the axes of the core spine and lumbar spine. Independent t tests were used to compare the differences between groups. Two-way repeated measure analysis of variance was used to compare the differences for both axes. The age variable was used as a covariate to control confounding effects for the data analyses. Results. The RHT was longer for the lumbar spine axis in subjects without LBP than those with LBP, especially without visual feedback. There was also

significant interaction in RST between subjects with and without LBP (F _7.18, P _ 0.01). For the core axis of the trunk, significant differences existed based on the main effect of side (F _ 9.07, P _ 0.004), trunk rotation (F _ 24.30, P _ 0.001), and both of these interactions (F _ 8.93, P _ 0.004). However, there was a lack of significant interaction with age for the lumbar and core spine axes (F _ 0.06, P _ 0.81). Conclusion. Although the control group included slightly younger volunteers compared with the LBP group, the stability index of the core spine significantly decreased in RHT and RST, especially when visual feedback was blocked for subjects with LBP. The interaction between visual feedback and trunk rotation indicated that core spine stability is critical in coordinating balance control. A trunk muscle imbalance may contribute to unbalanced postural activity, which could prompt a decreased, uncoordinated bracing effect in subjects with LBP. As a result, core spine training could be used in the prevention of postural instability in such subjects.

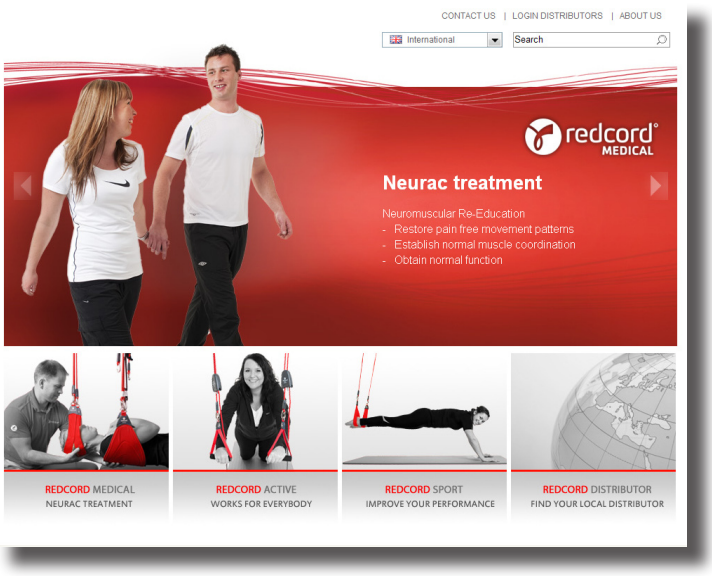
Courses in Taiwan

Redcord Active Intro Course instructor education was held in Taipei, Taiwan, 24th and 25th of March 2011. In total 11 persons passed their exam in a very successful seminar. Most of the instructors are athletic trainers but there are also some physiotherapists. Redcord distributor Ever Prosperous aims to arrange 10 Redcord Active Intro Courses in Taiwan in 2011 as there is a growing interest for Redcord Suspension Training in Taiwan. Norwegian instructor for the instructor education was Fredrik Halvorsen.

Fredrik Halvorsen with Redcord Active Intro Instructors in Taiwan.

New website!

If you haven't allready; check out www.redcord.com to see our new and up to date home page



Among the most obvious changes you will find are direct access from our front page into three market segments;

- Redcord Medical
- Redcord Active
- Redcord Sport

By dividing the website in three segments, the visitors can easier find relevant information and we can present customized solutions for the targeted customer groups.

English Neurac courses in Oslo, Norway

Neurac 2 Back and Pelvis:
18th May 2011

Neurac 2 Neck:
19th May 2011

Neurac 2 Upper Extremities:
20th May 2011

Neurac 2 Lower Extremities:
21st May 2011

New and updated courses!

Contact redcord@redcord.com for more information.

Redcord present at:

WCPT:
20.-23. June 2011