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In a retrospective study, extracorporeal shock wave therapy (ECSWT) successfully reduced pain and improved overall patient satisfaction in patients suffering from chronic non-insertional Achilles tendinopathy

Title: High-energy extracorporeal shock wave therapy as a treatment for chronic noninsertional Achilles tendinopathy

Authors: Furia JP

Reference: Am J Sports Med 2008; 36(3): 502-508

Type of study: Retrospective case control study

Keywords: Achilles tendon, injury, tendinopathy, shock wave therapy

EB Rating: 6/10

CI Rating: 7.5/10

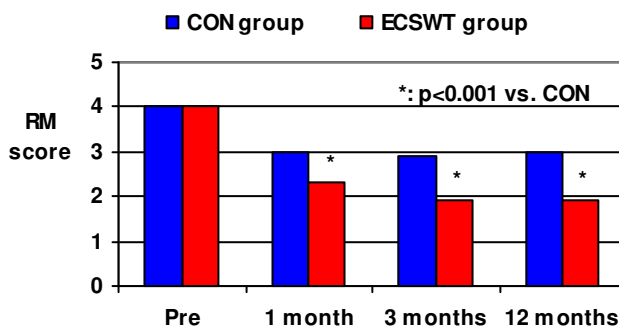
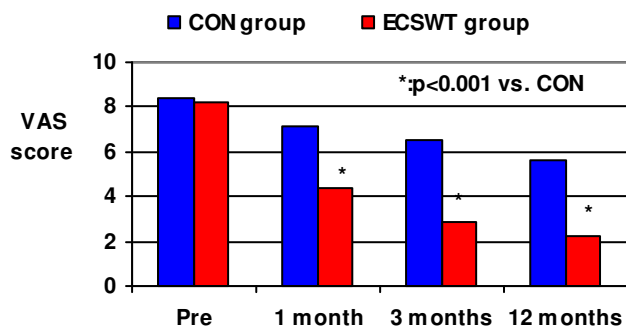
Background: High-energy extracorporeal shock wave therapy (ECSWT) has been used in many overuse tendinopathies including chronic insertional Achilles tendinopathy- however ECSWT has not been reported as treatment from chronic non-insertional Achilles tendinopathy

Research question/s: Does extracorporeal shock wave therapy (ECSWT) reduce pain in patients with non-insertional Achilles tendinopathy?

Methodology:

- Subjects: 64 patients with clinically diagnosed chronic non-insertional Achilles tendinopathy (> 6 months) who underwent treatment using various modalities
- Experimental procedure: 34 self selected subjects (51 ± 11 yrs) were treated with single dose high-energy shock wave therapy after local anesthesia (ECSWT group; 3000 shocks; 0.21 mJ/mm^2 ; total energy flux density, 604 mJ/mm^2), while 34 subjects (50 ± 17 yrs) underwent treatment with a variety of other non-operative therapies (CON group). Pain and outcome was assessed using a VAS pain score (0=no pain, 10=severe pain) and the 4 point Roles and Maudsley (RM) score (1=excellent, 4=poor)
- Measures of outcome: VAS and RM scores at pre-treatment, 1 month, 3 months, 12 months

Main finding/s:



Conclusion/s:

- In a retrospective study, extracorporeal shock wave therapy (ECSWT) successfully reduced pain and improved overall patient satisfaction in patients suffering from chronic non-insertional Achilles tendinopathy

Methodological considerations:

Selection bias, non randomized, non-blinded study, no placebo control group, clinical diagnosis

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Muscle activation for the middle and lower trapezius occurred maximally with prone horizontal abduction exercises when the glenohumeral joint was abducted between 90 and 125 degrees

Title: Activation of the trapezius muscle during varied forms of Kendall exercises

Authors: Kinney E, Wusthoff J, Zyck A, Hatzel B, Vaughn D, Strickler T, Glass S

Reference: Physical Ther Sport 2008; 9: 3-8

Type of study: Controlled clinical trial (laboratory based)

Keywords: shoulder injury, rehabilitation, trapezius muscle, activation, electromyography

EB Rating: 7/10

CI Rating: 6.5/10

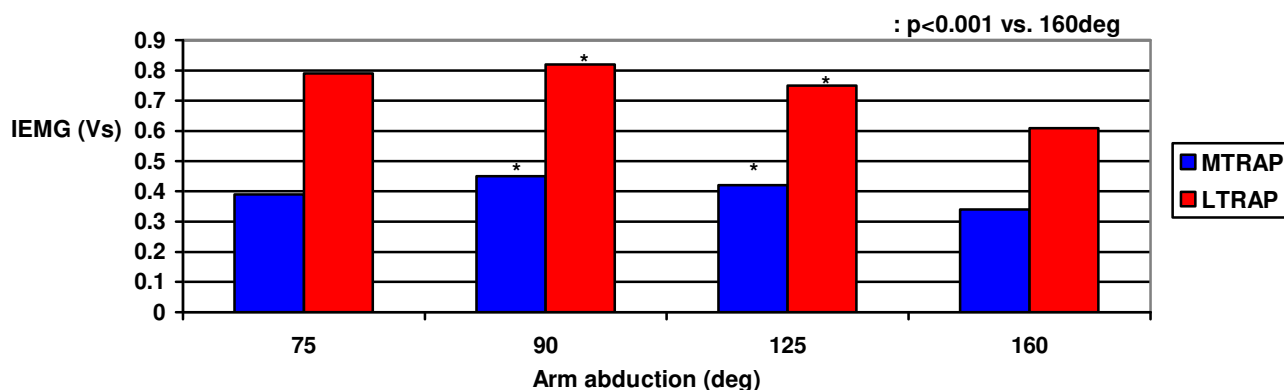
Background: In recent years it has been identified that rehabilitation of the trapezius muscle is important as this muscle plays a crucial role in maintaining proper shoulder mechanics

Research question/s: What is the activation pattern, as measured using electromyography (EMG) of the middle and lower trapezius during four prone horizontal abduction exercises of the glenohumeral joint (GHJ)?

Methodology:

- Subjects: 32 healthy non-injured subjects (female=19, male=13, 18-35 yrs)
- Experimental procedure: All the subjects were assessed and the concentric muscle activation patterns in the lower (LTRAP) and middle trapezius (MTRAP) were measured using surface EMG. Subjects performed 10 repetitions of horizontal glenohumeral joint abduction (ABD) in 4 positions (75°, 90°, 125° and 160°) using only the weight of the arm. EMG activity was normalized
- Measures of outcome: Normalized integrated EMG activity (IEMG) in MTRAP and LTRAP for each exercise

Main finding/s:



Conclusion/s:

- Muscle activation for the middle and lower trapezius occurred maximally with prone horizontal abduction exercises when the glenohumeral joint was abducted between 90 and 125 degrees

Methodological considerations:

Well conducted study

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Anti-pronation taping of the foot with a low medial longitudinal arch reduces activity of the tibialis anterior and the tibialis posterior muscle activity during walking – taping may therefore reduce the load of these extrinsic muscles of the ankle and the foot

Title: Tape that increases medial longitudinal arch height also reduces leg muscle activity: A preliminary study

Authors: Franettovich M, Chapman A, Vicenzino B

Reference: Med Sci Sports Exerc 2008; 40(4): 593-600

Type of study: Controlled clinical trial (non randomized)

Keywords: foot, arch height, taping, pronation, foot, electromyography

EB Rating: 6.5/10

CI Rating: 7.5/10

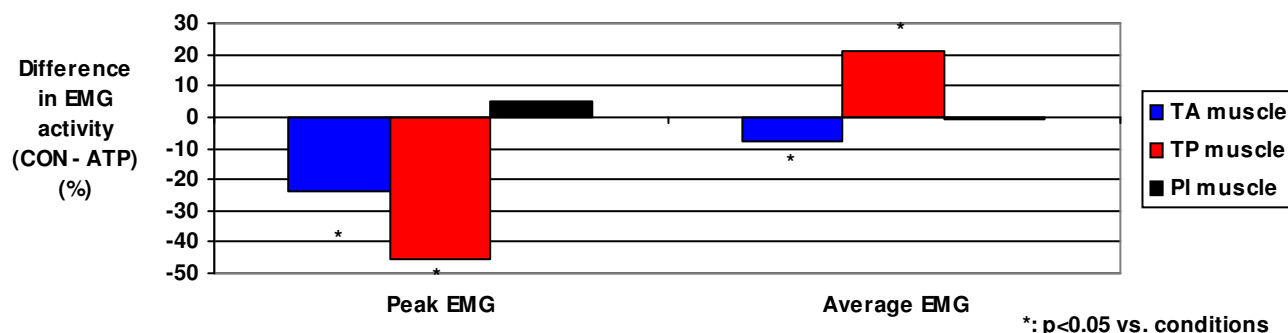
Background: Taping of the foot as an anti-pronation technique has been used clinically, but its possible effects on foot and lower limb biomechanics, in particular muscle function, have not been studied

Research question/s: Does anti-pronation taping alter the electromyographic (EMG) activity of tibialis anterior (TA), tibialis posterior (TP), and peroneus longus (PL) muscles during walking?

Methodology:

- Subjects: 5 subjects (male=2, female=3, age=36.4±7.5 yrs) who were asymptomatic but had a decreased lower medial longitudinal arch height (clinical assessment of gait walked on a treadmill)
- Experimental procedure: All the subjects were assessed (including arch height) and underwent barefoot walking on a treadmill (CON) followed by application of an anti-pronation tape technique (APT - augmented low-Dye) and repeat walking. Using surface and fine needle techniques (validated), electromyography (EMG) activity was recorded in the tibialis anterior (TA), tibialis posterior (TP), and peroneus longus (PL) muscles during walking
- Measures of outcome: Arch height (AH), EMG activity (peak and average amplitude, duration, time of onset, and time of offset) of muscles

Main finding/s:



- Arch height: There was a 12.9% increase in arch height in the APT condition compared with CON (p=0.005)
- In the APT condition, there was a small but significant increase in duration of TA EMG activity, and an earlier onset of EMG activity

Conclusion/s:

- Anti-pronation taping of the foot with a low medial longitudinal arch reduces activity of the tibialis anterior and the tibialis posterior muscle activity during walking – taping may therefore reduce the load of these extrinsic muscles of the ankle and the foot

Methodological considerations:

Small sample size, gender differences could not be studied

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In a prospective cohort study of ultra-marathon runners, the majority of body weight decrease (dehydration) occurred during the first 8 hours – in the 24 hour race, increased weight loss was associated with improved performance (total distance covered)

Title: Athletic performance and serial weight changes during 12- and 24-hour ultra-marathons

Authors: Kao W-F, Shyu C-L, Yang X-W, Hsu T-F, Chen J-J, Kao W-C, Polun-Chang, Huang Y-J, Kuo F-C, Huang CI, Lee C-H

Reference: Clin J Sports Med 2008; 18(2): 155-158

Type of study: Prospective cohort study

Keywords: dehydration, body weight, exercise performance, ultra-marathon, running

EB Rating: 7.5/10

CI Rating: 8/10

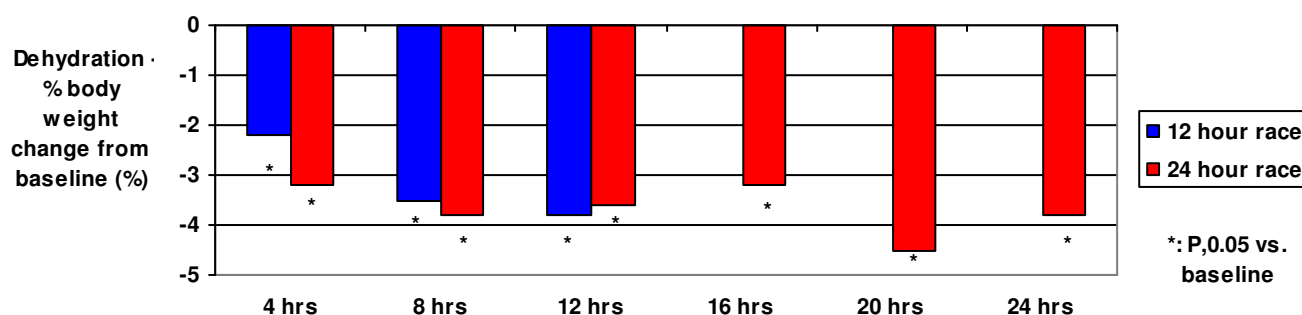
Background: Fluid intake recommendation in endurance sports are frequently given so that body weight is maintained and dehydration therefore minimized – the effect of dehydration on ultra-distance running performance has not been well studied in the field

Research question/s: Is dehydration (serial weight changes) related to athletic performance (distance covered) in athletes during 12- and 24-hour ultra-marathons?

Methodology:

- Subjects: 52 athletes participating in international ultra-marathons (12 hours: 45.3±6.4 yrs, male=17, female=1)(24h hours: 45.7±8.5 yrs, male=19, female=4)
- Experimental procedure: All athletes were screened before and assessed on repeated occasions during the 12- or 24-hour ultra-marathons respectively. Body weight changes were measured before, and at 4-hour intervals during, and immediately after the two races (12- and 24-hour races). Performance was measured as total km completed in the time (12 or 24 hrs).
- Measures of outcome: % body weight change (%) after the 12 and 24 hr race, and performance (km completed)

Main finding/s:



- There was no relationship between weight change and performance in the 12-hour race – however, increased weight loss was associated with improved performance (km completed) in the 24-hour race

Conclusion/s:

- In a prospective cohort study of ultra-marathon runners, the majority of body weight decrease (dehydration) occurred during the first 8 hours – in the 24 hour race, increased weight loss was associated with improved performance (total distance covered)

Methodological considerations:

Well conducted study, fluid and electrolyte balance as well and temperature regulation was not studied

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In a meta-analysis of 15 cohort studies, an increase in the dietary intake of antioxidant vitamin (C, E and β -carotene) is associated with a decrease in the risk of developing coronary heart disease

Title: Antioxidant vitamins intake and the risk of coronary heart disease: meta-analysis of cohort studies

Authors: Ye Z, Song H

Reference: Eur J Cardiovasc Prev Rehabil 2008; 15: 26-34

Type of study: Meta-analysis

Keywords: coronary artery disease, diet, supplements, antioxidants, vitamins

EB Rating: 8/10

CI Rating: 7.5/10

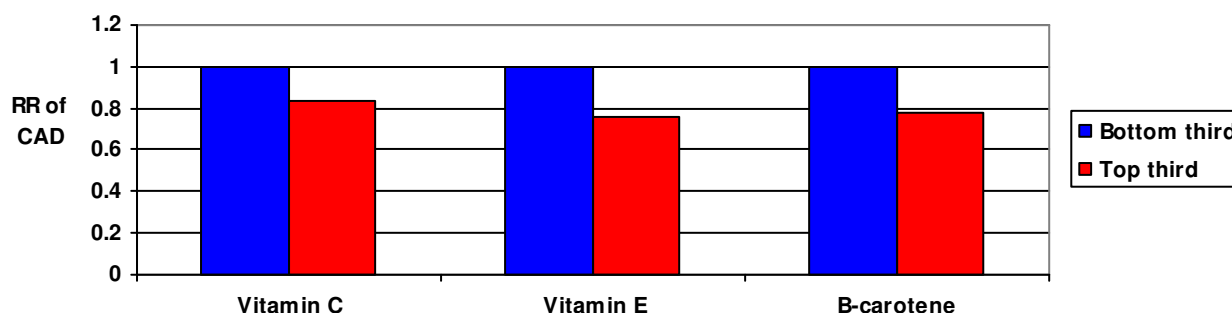
Background: Antioxidant vitamin intake from diet or supplements may be associated with a lower risk of coronary heart disease (CHD)

Research question/s: What is the relationship between antioxidant vitamins (vitamins C, E, and β -carotene) and CHD risk?

Methodology:

- Experimental procedure: Fifteen cohort studies in which a relative risk (and 95% CI) of coronary heart disease (CHD) related to antioxidant vitamins intake (diet or supplements) were included in a meta-analysis. This database included 7415 incident CHD cases and 374 488 participants (median follow-up ~ 10, 8.5, and 15 years for vitamins C, E, and β -carotene respectively).
- Measures of outcome: Relative risk of CHD (combined) (top third vs. bottom third)

Main finding/s:



- Increased dietary intake of vitamins C and E as well as Vitamin E supplement use have an inverse association with CHD risk – Vitamin C supplement use had no significant association with CHD risk

Conclusion/s:

- In a meta-analysis of 15 cohort studies, an increase in the dietary intake of antioxidant vitamin (C, E and β -carotene) is associated with a decrease in the risk of developing coronary heart disease

Methodological considerations:

Well conducted study

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