

# SportsMed Update

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**Soft tissue ultrasound assessment (Grey scale together with Power Doppler) for “tennis elbow” has a high sensitivity (98%) but poor specificity (61%), but the presence of neovascularity has a high specificity (98%) - this diagnostic examination is valuable in the assessment of this injury**

**Title:** Diagnostic accuracy of power Doppler ultrasound in patients with chronic tennis elbow

**Authors:** du Toit C, Stieler M, Saunders R, Bisset L, Vicenzino B

**Reference:** Br J Sports Med 2008; 42: 572-576

**Type of study:** Evaluation of a diagnostic test

**Keywords:** ultrasound, diagnosis, accuracy, elbow, epicondylopathy, neovascularity

**EB Rating:** 7/10

**CI Rating:** 7.5/10

**Background:** Diagnostic ultrasound is used in the diagnosis of soft tissue injuries, including the assessment of morphological changes and neovascularity – its accuracy has not been established in “tennis elbow”

**Research question/s:** What is the diagnostic accuracy of power Doppler and grey scale ultrasonography to assess morphological changes and neovascularity in lateral epicondylopathy (tennis elbow)?

**Methodology:**

- Subjects: 49 subjects (31 with clinical diagnosed “tennis elbow” for 3–120 months, 19 asymptomatic controls)
- Experimental procedure: All the elbows (32 with “tennis elbow”, 56 unaffected) were assessed clinically (standard criteria) and then grey scale and power Doppler ultrasonographic examination for morphological changes (echo changes, maximum anterior-posterior thickness, bony spurs) and neovascularity respectively
- Measures of outcome: Sensitivity and specificity (any morphological changes and specific changes, neovascularity) of ultrasound changes to gold standard (clinical)

**Main finding/s:**

	<b>Sensitivity</b>	<b>Specificity</b>
Any changes (morphology and/or neovascularity)	97	61
Morphological (Grey scale) changes	81	63
Neovascularity (Power Doppler) changes	81	98
Morphology (echo changes)	53	89
Morphology (bony spur)	63	63
Morphology (antero-posterior thickness)	72	52

- Neovascularity was equally distributed between the superficial and deep part of the tendon
- Clinical severity measures did not correlate with neovascularity scores

**Conclusion/s:**

- Soft tissue ultrasound assessment (Grey scale together with Power Doppler) for “tennis elbow” has a high sensitivity (98%) but poor specificity (61%), but the presence of neovascularity has a high specificity (98%) - this diagnostic examination is valuable in the assessment of this injury

**Methodological considerations:**

Well conducted study, single examiner not blinded to symptomatic elbows,

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## In a randomized, clinical trial extracorporeal shock wave therapy improved pain, function, and quality of life significantly more than placebo in patients with chronic plantar fasciitis

**Title:** Radial extracorporeal shock wave therapy is safe and effective in the treatment of chronic recalcitrant plantar fasciitis

**Authors:** Gerdesmeyer L, Frey C, Vester J, Maier M, Weil Jr L, Weil Sr L, Russlies M, Stienstra J, Scurran B, Fedder K, Diehl P, Lohrer H, Henne M, Gollwitzer H

**Reference:** Am J Sports Med 2008; 36(11): 2100-2109

**Type of study:** Randomized, controlled, clinical trial

**Keywords:** heel pain, plantar fasciitis, shock wave, lithotripsy, radial extracorporeal shock wave therapy

**EB Rating:** 8/10

**CI Rating:** 8/10

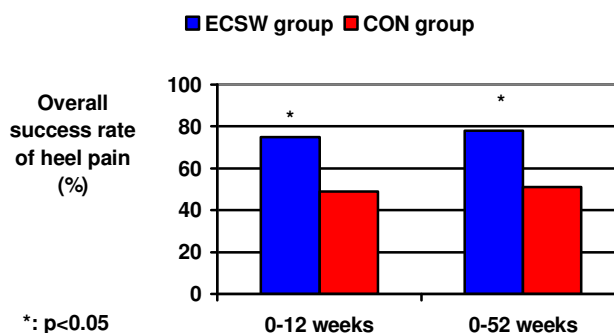
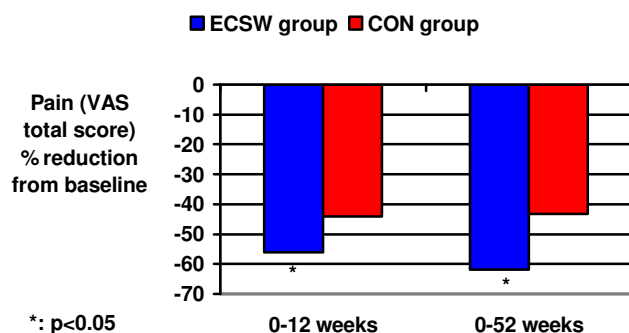
**Background:** There is some evidence that radial extracorporeal shock wave therapy may be an effective treatment for chronic plantar fasciitis but this requires further assessment in controlled clinical trials

**Research question/s:** Does radial extracorporeal shock wave therapy reduce pain and improve function in chronic plantar fasciitis?

### Methodology:

- Subjects: 245 subjects with chronic plantar fasciitis (clinical diagnosis with specific inclusion/exclusion criteria)
- Experimental procedure: Subjects were randomized into a placebo treatment group (CON=118, 52±11yrs, males=33%) and a shock wave treatment group (ECSW=125, 54±12yrs, males=30%) (3 X shock wave therapy at 0.16 mJ/mm<sup>2</sup>; 2000 impulses). Assessments were done before and after 12 and 52 weeks for main outcomes [(Pain—total score, heel pain at first step in morning, during daily activity, during standard pressure), overall success rates, and success rates of the single visual analog scale scores (heel pain at first steps in the morning, during daily activities, during standardized pressure force)] and secondary outcomes [function (SF-36), and patients' and investigators' global judgment of effectiveness]
- Measures of outcome: Main and secondary outcomes at 12 and 52 weeks (1 year)

### Main finding/s:



- Secondary outcomes: In all secondary outcomes the ECSW was superior to the CON group
- No relevant side effects were observed

### Conclusion/s:

- In a randomized, clinical trial extracorporeal shock wave therapy improved pain, function, and quality of life significantly more than placebo in patients with chronic plantar fasciitis

### Methodological considerations:

Well conducted study

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## The total distance walked during a 6min Walk Distance (6MWD) test is a good predictor of mortality primarily in patients with more severe COPD – measurement of oxygen desaturation during the 6MWT does improve the predictive ability of the 6MWD

**Title:** Distance and oxygen desaturation during the 6-min walk test as predictors of long-term mortality in patients with COPD

**Authors:** Casanova C, Cote C, Marin JM, Pinto-Plata V, de Torres JP, Aguirre-Jaime A, Vassaux C, Celli BR

**Reference:** Chest 2008; 134: 746-752

**Type of study:** Prospective cohort study

**Keywords:** COPD, mortality, prognosis, predictors, 6-min walk test, oxygen desaturation

**EB Rating:** 7.5/10

**CI Rating:** 7.5/10

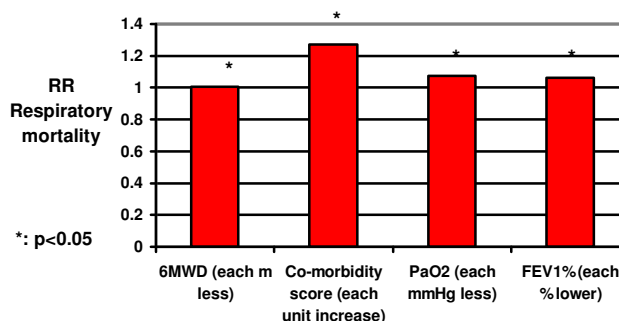
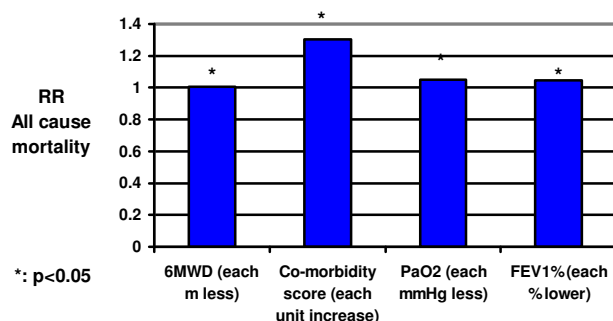
**Background:** The 6-min walk test (6MWT) is an easy test to administer and has been shown to predict mortality in patients with severe COPD – its value in less severe COPD, and whether oxygen desaturation measured during the test adds to the value of the test has not been determined

**Research question/s:** Does the distance walked and measurement of oxygen desaturation during the 6-min walk test (6MWT) predict prognosis in patients with mild and more severe COPD?

### Methodology:

- Subjects: 576 patients with COPD (males=514, 51-81 yrs, FEV<sub>1</sub>%=42±17)
- Experimental procedure: All the subjects were assessed (FEV<sub>1</sub>, body mass index, Pao<sub>2</sub>, Co-morbidity (Charlson co-morbidity score), 6-min walk distance (6MWD), and oxygen desaturation by pulse oximetry (Spo<sub>2</sub>)(fall in Spo<sub>2</sub> ≥ 4% or Spo<sub>2</sub> < 90%) during the 6MWT) and then followed for at least 3 years (median follow-up =30 months). All cause (n=220 died) and respiratory mortality was documented.
- Measures of outcome: Predictors of all-cause and respiratory mortality (regression analysis)

### Main finding/s:



- In patients with FEV<sub>1</sub> < 50%, the 6MWD was a particularly good predictor of all-cause and respiratory mortality (p<0.001), and in patients with desaturation during the 6MWT there was a higher mortality rate than patients without desaturation (67% vs. 38%, p<0.001)

### Conclusion/s:

- The total distance walked during a 6min Walk Distance (6MWD) test is a good predictor of mortality primarily in patients with more severe COPD – measurement of oxygen desaturation during the 6MWT does improve the predictive ability of the 6MWD

### Methodological considerations:

Well conducted study, mostly male subjects, other predictors of mortality were not assessed, subjects were from two different countries (corrected for in analysis)

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## Despite reduced lung function (spirometry), children with chronic lung disease have a similar response to an exercise test at lower intensity (below anaerobic threshold) but they have a reduced exercise capacity at peak exercise

**Title:** Optimal level of physical activity in children with chronic lung diseases

**Authors:** Sritippayawan S, Harnruthakorn C, Deerojanawong J, Samransamruajkit R, Prapphal N

**Reference:** Acta Paediatrica 2008; 97: 1582-1587

**Type of study:** Case control study

**Keywords:** children, chronic lung disease, exercise test, spirometry, physical activity

**EB Rating:** 7/10

**CI Rating:** 7/10

**Background:** Regular exercise has known substantial health benefits to patients with chronic disease, including respiratory disease. In children with chronic lung disease, exercise limitations are not well described

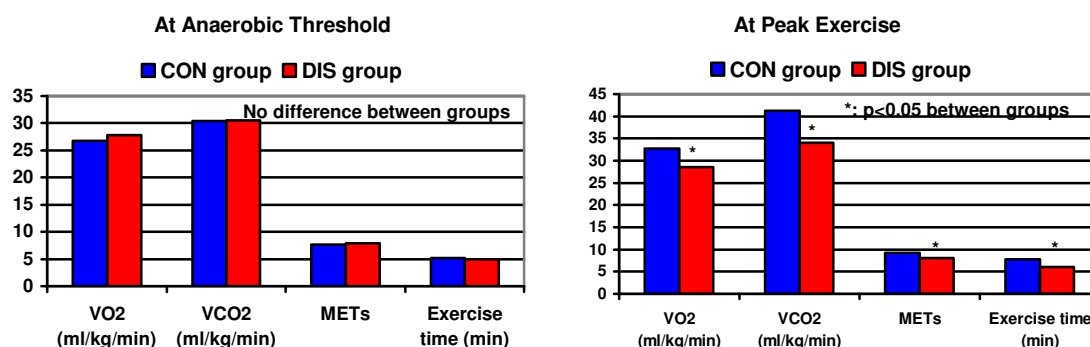
**Research question/s:** What are the exercise limitations in children with chronic lung diseases (CLD), and how are these related to disease severity?

### Methodology:

- Subjects: 18 children with chronic lung disease (DIS, 13.5±2.4 yrs, males=33%), 18 healthy controls (CON, no history of lung diseases)
- Experimental procedure: All the subjects were assessed and then underwent pulmonary function tests (standard spirometry) and a treadmill exercise stress test [measurements were taken and reported at the anaerobic threshold (AT) and at peak exercise(PEAK)]
- Measures of outcome: Spirometry, exercise stress test (VO<sub>2</sub>, VCO<sub>2</sub>, METs, exercise time)

### Main finding/s:

- Spirometry: Children in the DIS group had 1) lower forced vital capacity (FVC), forced expiratory volume in 1 sec (FEV)<sub>1</sub>, forced expiratory flow rate between 25% and 75% of vital capacity (FEF)<sub>25-75%</sub> and total lung capacity (TLC) and 2) higher residual volume (RV)/TLC ratio compared with children in the CON group



- Exercise time (min) was significantly less in the moderate/severe subgroup of the DIS group compared with children in the less severe subgroup (p=0.03)

### Conclusion/s:

- Despite reduced lung function (spirometry), children with chronic lung disease have a similar response to an exercise test at lower intensity (below anaerobic threshold) but they have a reduced exercise capacity at peak exercise

### Methodological considerations:

Small sample, children with various lung diseases

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## Ingestion of caffeine, but not aspirin, 60 min before exercise significantly enhanced resistance training performance

**Title:** Effects of caffeine and aspirin on light resistance training performance, perceived exertion, and pain perception

**Authors:** Hudson GM, Green JM, Bishop PA, Richardson MT

**Reference:** J Strength Cond Res 2008; 22(6): 1950 – 1957

**Type of study:** Randomized, controlled, clinical trial (laboratory)

**Keywords:** strength training, caffeine, aspirin, ergogenic aid, muscular endurance

**EB Rating:** 7/10

**CI Rating:** 6.5/10

**Background:** Both caffeine and aspirin ingestion may potentially enhance exercise performance during light resistance training

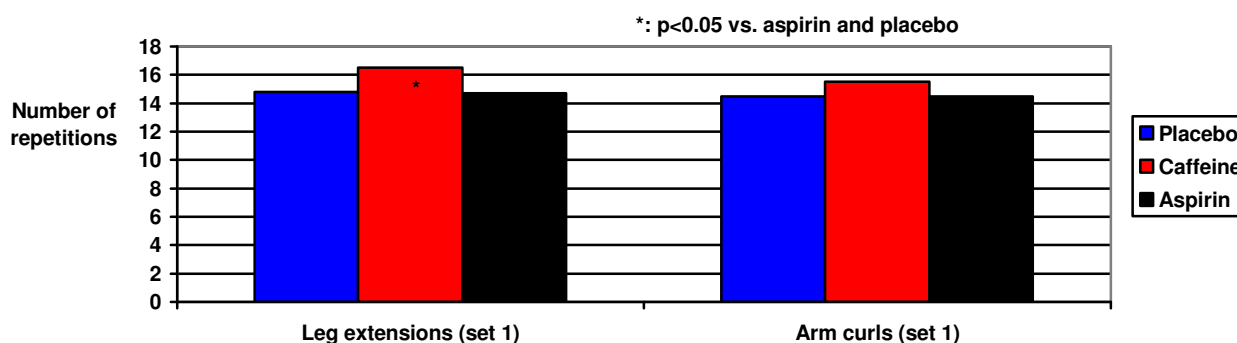
**Research question/s:** Do caffeine and aspirin ingestion improve muscle endurance (repetitions), heart rate, perceived exertion, and perceived pain during light resistance training bouts performed to volitional failure?

### Methodology:

- Subjects: 15 healthy male subjects ( $22 \pm 1.3$  yrs,  $78.6 \pm 9.6$  kg)
- Experimental procedure: All the subjects were assessed and then performed 3 light resistance training sessions [4 sets of 12-repetition maximum for leg extensions (LE) and seated arm curls (AC)], in a randomized fashion, 1 hour after ingestion of aspirin (10 mg.kg<sup>-1</sup>), caffeine (6 mg.kg<sup>-1</sup>), or matched placebo. Rating of perceived exertion (RPE), heart rate (HR), perceived pain index (PPI), and repetitions (per set and total per exercise) were recorded
- Measures of outcome: RPE, HR, PPI, performance (repetitions –per each of 4 sets; LE and AC)

### Main finding/s:

- RPE, HR and PPI: Caffeine increased HR compared with aspirin and placebo, while aspirin increased PPI and RPE (vs. placebo)



- Aspirin resulted in significantly higher PPI in set 1 (LE)

### Conclusion/s:

- Ingestion of caffeine, but not aspirin, 60 min before exercise significantly enhanced resistance training performance

### Methodological considerations:

Well conducted study, variation in individual responses, only males tested

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