

SportsMed Update

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In elite rugby union players, there is a high incidence (injuries/1000 hours play) of head injury (6.6) and concussion (4.1) in matches - tackling and being tackled head-on are the most common mechanisms of injury

Title: The epidemiology of head injuries in English professional rugby union

Authors: Kemp SPT, Hudson Z, Brooks JHM, Fuller CW

Reference: Clin J Sport Med 2008; 18(3): 227-234

Type of study: Prospective cohort study

Keywords: head, injury, concussion, rugby union, risk factors

EB Rating: 8/10

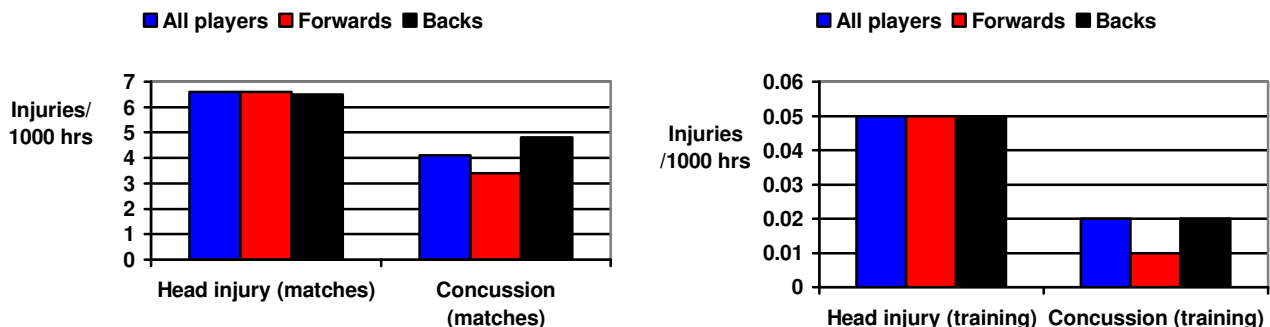
CI Rating: 7.5/10

Background: Rugby union is a commonly played contact sport and players have a high risk of sustaining head injuries – the precise pattern and factors associated with head injuries in rugby union has not been well studied
Research question/s: What is the incidence, nature, severity, and what are the causes of head injuries sustained by professional rugby union players?

Methodology:

- Subjects: 757 male rugby union players, playing in 3 seasons recruited from 13 premiership rugby union clubs
- Experimental procedure: This study formed part of a larger study on injuries in rugby players. Players were assessed, and then followed over a season. Medical staff reported all head injuries (and concussion as a sub-group) on a weekly basis using a standard form (anatomical location, diagnosis, severity (return to playing – days), playing position, use of headgear, and activity) - fitness coaches reported playing hrs (training, match).
- Measures of outcome: Incidence of injury (injuries/1000 hrs play)(matches, training) (overall and in sub-groups), mechanisms of injury, and injury severity (days lost)

Main finding/s:



- Average time lost: The average time lost for head injury was 14 days and for concussion was 13 days - 48% players returned to play safely within 7 days
- Mechanisms of injury in matches: tackling head-on (28%), collisions (20%), and being tackled head-on (19%) were the most common mechanisms – foul play was associated with head injury in matches in 17% cases and mouth guards and headgear use was associated with a reduced incidence of concussion

Conclusion/s:

- In elite rugby union players, there is a high incidence (injuries/1000 hours play) of head injury (6.6) and concussion (4.1) in matches - tackling and being tackled head-on are the most common mechanisms of injury

Methodological considerations:

Well conducted study

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In a small, short-term follow-up, randomized clinical trial, low-frequency electrical stimulation reduced pain and improved function in patients suffering from lateral epicondylitis

Title: An alternative approach to treating lateral epicondylitis; A randomized, placebo-controlled, double-blinded study

Authors: Nourbakhsh MR, Fearon FJ,

Reference: Clin Rehabil 2008; 22; 601-609

Type of study: Randomized, placebo controlled, double blind, clinical trial

Keywords: elbow, injury, lateral epicondylitis, electrical stimulation, randomized clinical trial, pain, function

EB Rating: 7/10

CI Rating: 7.5/10

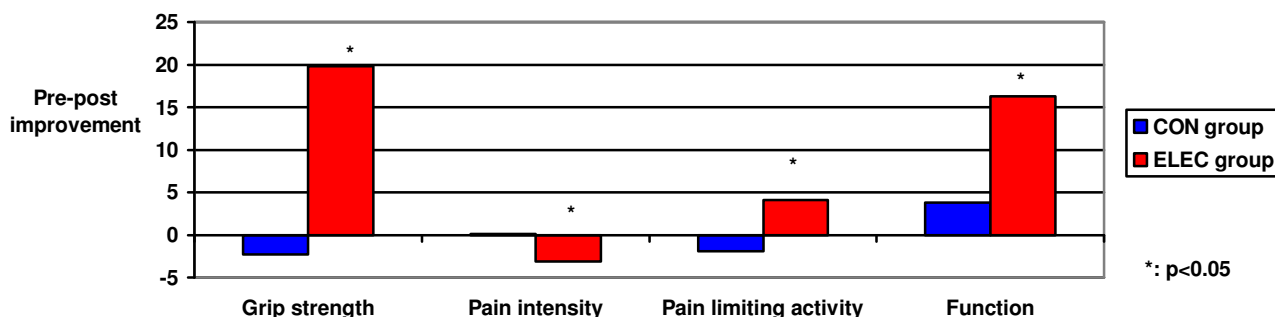
Background: There are many treatment modalities for lateral epicondylitis (tennis elbow), - therefore alternative treatment for this condition are sought constantly

Research question/s: Does low-frequency electrical stimulation improve pain, grip strength and functional abilities in subjects with chronic lateral epicondylitis?

Methodology:

- Subjects: 18 subjects (24-72 yrs) with chronic lateral epicondylitis (no treatment for > 3 months)
- Experimental procedure: All the subjects were assessed and then randomly assigned to 6 sessions of treatment over 2-3 weeks by either 1) low-frequency electrical stimulation over the palpated tender points (ELEC=10, 4Hz, 30 sec over tender point) or 2) placebo (CON=8, similar electrical stimulation but set at 0). Pain (intensity and limitations), function, and grip strength were assessed before and after treatment and the ELEC group was re-assessed at 6 months
- Measures of outcome: Pain intensity and limitation of activity due to pain (11 point scale), function (patient specific function scale), grip strength (hand held dynamometer)

Main finding/s:



- 6 months follow-up (ELEC group): After 6 months 100% of subjects in the ELEC group maintained the improved function, while 83% remained pain-free

Conclusion/s:

- In a small, short-term follow-up, randomized clinical trial, low-frequency electrical stimulation reduced pain and improved function in patients suffering from lateral epicondylitis

Methodological considerations:

Small sample size, short term-follow up

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In a prospective cohort study of novice runners, excessive impact shock during heel strike and at the propulsion phase of running (higher vertical peak force) may contribute to an increased risk of developing patellofemoral pain (PFP)

Title: Gait-related intrinsic risk factors for patellofemoral pain in novice recreational runners

Authors: Thijs Y, De Clercq D, Roosen P, Witvrouw E

Reference: Br J Sports Med 2008; 42: 466-471

Type of study: Prospective, cohort study

Keywords: knee, chronic, injury, patellofemoral pain, anterior knee pain, risk factors, running

EB Rating: 8/10

CI Rating: 8/10

Background: The identification of intrinsic risk factors for running injuries is an important step in reducing the risk for running-related injuries. Patellofemoral pain syndrome is one of the most common running injuries.

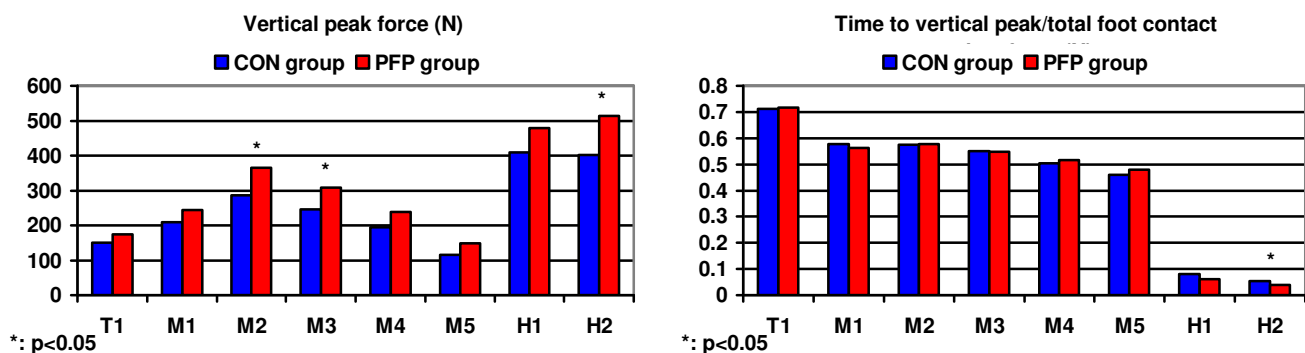
Research question/s: What are the gait-related intrinsic risk factors for patellofemoral pain (PFP) in novice recreational runners?

Methodology:

- Subjects: 102 novice recreational runners (female=89, 37±9.5 yrs, BMI 25±3 kg/m²) who were enrolled to complete a 10-week "start to run" program, with no past history of knee or lower leg complaints
- Experimental procedure: All the subjects were assessed during standing (foot posture using 6 criteria for the foot pressure index – FPI; ranging from pronated > 6 to supinated < -1) and during running [plantar pressure measurements; Footscan measuring pressure in 8 zones - metatarsals (M1-5), medial and lateral heel (H1 and H2), hallux (T1)]. Sports Physicians documented all the running-related injuries during the 10 week follow-up time - 17 runners developed patellofemoral pain on clinical criteria (PFP group) The remaining runners were the control (CON) group
- Measures of outcome: FPI (5 categories), Plantar pressure (vertical peak force, time to vertical peak force relative to total foot contact time)

Main finding/s:

- FPI: There was no significant association between an excessively pronated or supinated foot posture and the development of PFP



- Predictors of PFP (logistic regression analysis): A higher vertical peak force underneath the second metatarsal and shorter time to the vertical peak force underneath the lateral heel

Conclusion/s:

- In a prospective cohort study of novice runners, excessive impact shock during heel strike and at the propulsion phase of running (higher vertical peak force) may contribute to an increased risk of developing patellofemoral pain (PFP)

Methodological considerations:

Well conducted study

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In a prospective cohort study in women, increased physical activity reduced the risk of developing coronary heart disease in all body mass index categories (normal, obese and overweight) – the lowest risk was in the lean and active group

Title: The joint effects of physical activity and body mass index on coronary heart disease risk in women

Authors: Weinstein AR, Sesso HD, Lee I-M, Rexrode KM, Cook NR, Manson JE, Buring JE, Gaziano M

Reference: Arch Intern Med 2008; 168 (8): 884-890

Type of study: Prospective cohort study

Keywords: coronary heart disease, physical activity, obesity, BMI, risk

EB Rating: 8/10

CI Rating: 8/10

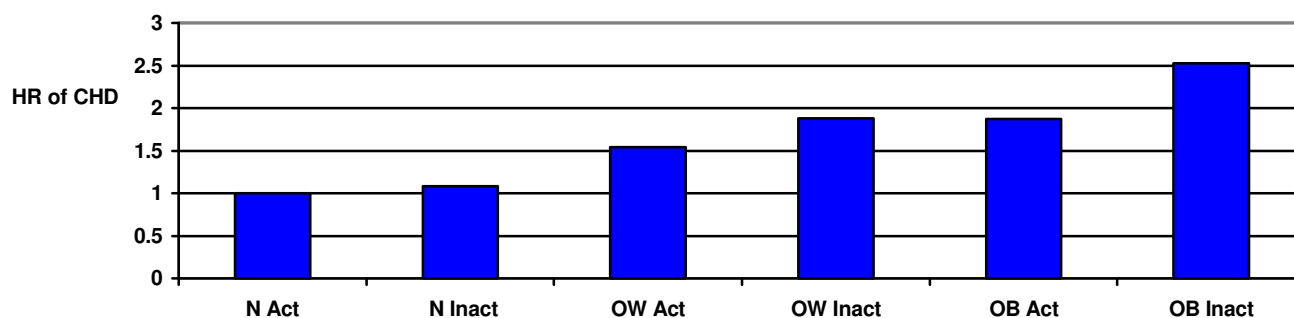
Background: It has been shown that decreased physical activity and increased body mass index are both independent risk factors for coronary heart disease (CHD) – their combined effect on risk is not well known

Research question/s: Is there a combined association between decreased physical activity and increased body mass index on the risk of coronary heart disease?

Methodology:

- Subjects: 38 987 females, who were part of the Women's Health Study (free of cardiovascular disease, cancer, and diabetes at baseline)
- Experimental procedure: All the subjects were assessed at baseline and then followed up for a mean of 10.9 years. Baseline weight and height were used to BMI and categorized as normal (N: <25), overweight (OW: 25-30) or obese (OB: ≥30). Recreational activities were reported on entry - being active was defined ≥1000 kilocalories per week (Act vs. Inact). Based on these groups, 6 joint body weight-physical activity categories were defined. 948 incidents of CHD (cardiovascular event including nonfatal myocardial infarction, coronary artery bypass graft, percutaneous transluminal coronary angioplasty, or CHD death) occurred during follow-up
- Measures of outcome: Risk of CHD in different groups (Hazard ratio)

Main finding/s:



Conclusion/s:

- In a prospective cohort study in women, increased physical activity reduced the risk of developing coronary heart disease in all body mass index categories (normal, obese and overweight) – the lowest risk was in the lean and active group

Methodological considerations:

Well conducted study, only females were studied, self reported data, sample too small to analyze subgroups of CAD presentations

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In a randomized, controlled, clinical trial, caffeine ingestion (6 mg·kg⁻¹ body weight) maintained maximum voluntary contraction and increased maximal cycling power during prolonged exercise in the heat; despite dehydration and hyperthermia

Title: Caffeine effects on short-term performance during prolonged exercise in the heat

Authors: Del Coso J, Estevez E, Mora-Rodriguez R

Reference: Med Sci Sports Exerc 2008; 40(4): 744-751

Type of study: Randomized controlled clinical trial

Keywords: maximal voluntary contraction, maximal cycling power, central activation ratio, rehydration, rectal temperature, ergogenic aids

EB Rating: 8/10

CI Rating: 7/10

Background: The potential beneficial effects of caffeine on prolonged exercise performance in the heat have not been well established

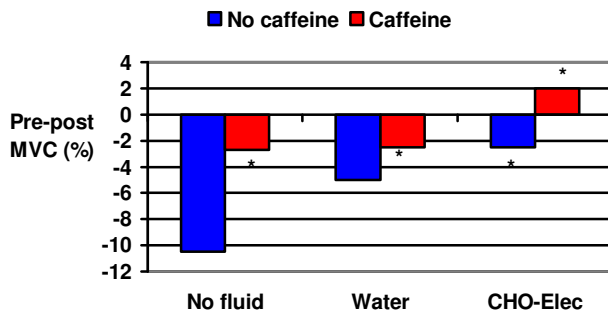
Research question/s: Does caffeine ingestion alone, or combined with water or carbohydrate ingestion decrease fatigue and improve muscle function during prolonged exercise in the heat?

Methodology:

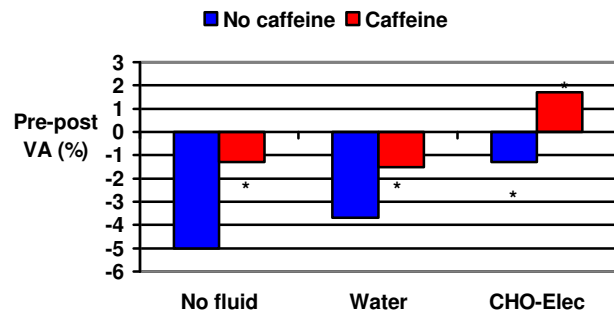
- Subjects: 7 endurance-trained cyclists ($VO_{2max} = 61 \pm 8 \text{ mL}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$)
- Experimental procedure: All the subjects were assessed and then underwent 6 cycle exercise tests (120 min at 63% VO_{2max}) in a hot-dry environment (36°C; 29% humidity) ingesting either: 1) no fluid (NF), 2) water (WAT - to replace 97% fluid losses) or 3) the same volume of a 6% carbohydrate-electrolyte solution (CES). In each of the 3 fluid regimens either caffeine (Cf; 6mg/kg) or placebo was ingested. Before and after each exercise test, maximal voluntary contraction (MVC), voluntary activation (VA), and electrically evoked contractile properties of the quadriceps were determined, while rectal temperature and other parameters including maximal cycling power (P_{MAX}) was measured regularly during each test
- Measures of outcome: P_{MAX} , MVC and VA during tests

Main finding/s:

- P_{MAX} : Caffeine ingestion increased P_{MAX} by 3% above trials without caffeine ($P < 0.05$)



*: $p < 0.05$ vs. No fluid



*: $p < 0.05$ vs. No fluid

- There were no differences in electrically evoked contractile properties among trials

Conclusion/s:

- In a randomized, controlled, clinical trial, caffeine ingestion (6 mg·kg⁻¹ body weight) maintained maximum voluntary contraction and increased maximal cycling power during prolonged exercise in the heat; despite dehydration and hyperthermia

Methodological considerations:

Well conducted study

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