

# SportsMedUpdate

## THE FOOTBALL ASSOCIATION MEDICAL RESEARCH PROGRAMME: AN AUDIT OF INJURIES IN ACADEMY YOUTH FOOTBALL

Price RJ, Hawkins RD, Hulse MA. *et al.* *Br J Sports Med* 2004;38:466-71

### Background:

Young footballers may be at a higher risk of overuse injuries because of the immaturity of their musculoskeletal systems, but prospective studies in youth football are limited.

### Research question/s:

What is the incidence of injuries sustained in English youth academy football over two competitive seasons?

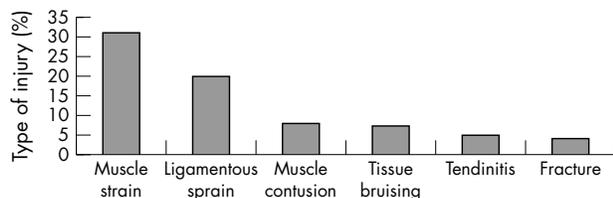
### Methodology:

*Subjects:* 4773 football players (9-19 years).

*Experimental procedure:* Over two seasons, all injuries during football were documented by medical staff at 38 English football club youth academies, using a specific injury audit questionnaire with a weekly return form that documented each club's current injury status.

*Measures of outcome:* Incidence of injury (injuries per season), days and games missed, injuries per age group, injuries during different times in the season, types of injuries.

### Main finding/s:



- Incidence of injury: the mean injury rate was 0.40 per player per season
- Days and games missed: mean days missed for each injury was 21.9 (33.63), and mean games missed per injury was 2.31 (3.66) (total time absent through injury - 6% of the player's development time)
- Injuries per age: there was an increased incidence of injury with increasing age
- Times of season: injury incidence varied throughout the season (training injuries peaked mid-season in January ( $p < 0.05$ ) and competition injuries peaked at the beginning of the season in October ( $p < 0.05$ ))
- Location of injuries: mostly lower limb (similar for thigh (19%), ankle (19%), and knee (18%))
- Growth related conditions accounted for 5% of total injuries, peaking in the under 13 age group for Osgood-Schlatter's disease and the under 11 age group for Sever's disease

### Conclusion/s:

Youth footballers (9-19 years) are at high risk of injury (0.40 injuries per player per season), mostly affecting the soft tissues (muscle, ligament, tendons) of the lower limb, and are more common in the older player groups.

**Evidence based rating:** 7/10 **Clinical interest rating:** 7.5/10

**Type of study:** Prospective cohort study

**Methodological considerations:** Well-conducted study but no measurement of exposure time

**Keywords:** football, injuries, youth, epidemiology

## BENEFITS OF 2 YEARS OF INTENSE EXERCISE ON BONE DENSITY, PHYSICAL FITNESS, AND BLOOD LIPIDS IN EARLY POST-MENOPAUSAL OSTEOPENIC WOMEN

Kemmler W, Lauber D, Weineck J. *et al.* *Arch Intern Med* 2004;164:1084-91

### Background:

Physical exercise may prevent some of the negative effects on health, other than bone loss, that are associated with early menopause.

### Research question/s:

Does intense exercise improve physical fitness, bone mineral density (BMD), back pain, and blood lipids in early post-menopausal women?

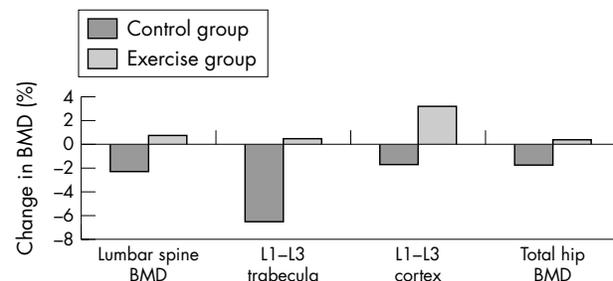
### Methodology:

*Subjects:* 50 post-menopausal women (mean 55.5 years) who exercised with no medication or illness affecting bone metabolism (EG), and 33 women (mean 55.9 years) who served as a non-training control group (CG).

*Experimental procedure:* The EG participated in two group training sessions/week and two home training sessions/week for 26 months, while subjects in both groups received calcium and cholecalciferol.

*Measures of outcome:* Per cent changes from baseline in physical fitness (maximum strength, cardiovascular performance), bone mineral density (lumbar spine DXA, QCT, proximal femur DXA, forearm DXA), bone formation (serum osteocalcin) and resorption (serum cross-links), blood lipid levels, vasomotor symptoms related to menopause, pain.

### Main finding/s:



- Physical fitness parameters were significantly improved in the EG compared with the CG
- Bone mineral density: lumbar spine (DXA L1-L4, EG + 0.7% vs CG - 2.3%), Qct L1-L3 trabecular region of interest (EG + 0.4% vs CG -6.6%), QCT L1-L3 cortical region of interest (EG + 3.1% vs CG -1.7%), and total hip (DXA, EG -0.3% vs CG -1.7%)
- Serum cholesterol (EG -14.2% vs CG + 23.2%); and pain at the spine were improved in the EG group

### Conclusion/s:

In osteopenic women during early menopause, a general purpose exercise programme with special emphasis on bone density can significantly improve muscle strength and endurance, reduce bone loss and back pain, and improve lipid levels.

**Evidence based rating:** 7/10 **Clinical interest rating:** 8/10

**Type of study:** Non-randomised, controlled clinical trial

**Methodological considerations:** No randomisation into groups

**Keywords:** women, post-menopausal, exercise, fitness, bone, cardiovascular risk, lipids, back pain

## A PILOT INTERVENTION TO INCREASE CALCIUM INTAKE IN FEMALE COLLEGIATE ATHLETES

Mehlenbeck RS, Ward KD, Klesges RC. *et al. Int J Sport Nutri Exerc Metab* 2004;14:18–29

### Background:

It has been shown that calcium intake in adolescent and young adult female athletes often is inadequate to optimise peak bone mass, which is an important risk factor for the development of osteoporosis.

### Research question/s:

Does calcium supplementation in eumenorrhic female collegiate athletes increase the calcium intake to recommended levels and does this increase bone mineral density (BMD)?

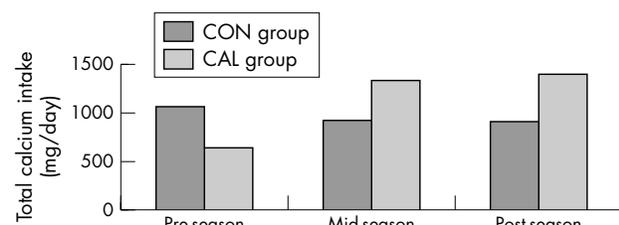
### Methodology:

**Subjects:** 48 eumenorrhic female athletes (15 soccer, seven cross-country, eight indoor track, and 18 basketball).

**Experimental procedure:** Subjects were randomised at the beginning of a competitive season to receive either an oral calcium supplement (1000 mg calcium citrate/400 IU vitamin D) (CAL group, mean age  $20 \pm 1.3$  years) or placebo (CON group, mean age  $19.6 \pm 1.4$  years) daily throughout the training season (16 weeks). Adherence was 70%. Measures were taken pre-, mid-, and post-season.

**Measures of outcome:** 1) calcium intake (rapid assessment method); 2) self reported physical activity (PAR; 30); 3) BMD—total body and leg BMD (dual energy x ray absorptiometry - DEXA; Hologic QDR-2000).

### Main finding/s:



- Calcium intake: pre-season calcium intake was lower than national recommendations ( $842 \pm 719$  mg/d) and was lower in the CON group compared to the CAL group ( $649 \pm 268$  vs  $1071 \pm 986$  mg/d) ( $p=0.064$ ). Calcium supplementation increased total calcium intake to  $1397 \pm 411$  mg/d
- BMD: There was no significant difference in BMD over time and between groups during the 16-week intervention. A small increase of 0.8% was observed in leg BMD across teams

### Conclusion/s:

- Calcium supplements (1000 mg/d) supplied to young female athletes, adequately increased daily calcium intake but did not increase BMD over a 16 week training period
- Longer intervention trials are required to determine whether calcium supplementation has a positive effect on BMD

**Evidence based rating:** 7.5/10 **Clinical interest rating:** 7.5/10

**Type of study:** Double-blind, randomised, placebo controlled clinical trial

**Methodological considerations:** Too short intervention to affect BMD

**Keywords:** athletes, bone mineral density, calcium, DEXA, exercise, training

## SERUM ELECTROLYTE CONCENTRATIONS AND HYDRATION STATUS ARE NOT ASSOCIATED WITH EXERCISE ASSOCIATED MUSCLE CRAMPING (EAMC) IN DISTANCE RUNNERS

Schwellnus M, Nicol J, Laubscher R. *et al. Br J Sports Med* 2004;38:488–92

### Background:

The association between exercise associated muscle cramping (EAMC), dehydration, and serum electrolyte status has not been well documented.

### Research question/s:

Is acute EAMC in distance runners related to changes in serum electrolyte concentrations and hydration status?

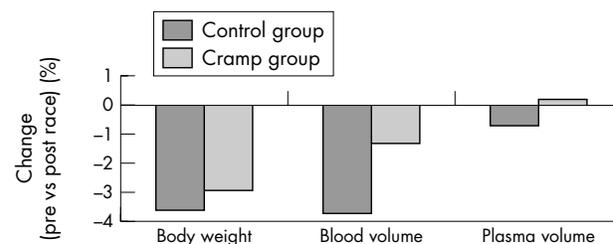
### Methodology:

**Subjects:** 72 ultra-distance runners participating in a road race.

**Experimental procedure:** All the subjects were weighed before and immediately after the race, and blood samples were taken before the race, immediately after the race, and 60 minutes after the race. Runners who suffered from acute EAMC during the race formed the cramp group (cramp,  $n=21$ ), while runners with no history of EAMC during the race formed the control group (control,  $n=22$ ).

**Measures of outcome:** Measures of hydration status (body weight, calculated blood volume, red cell volume), serum electrolyte concentrations (sodium, potassium, calcium, and magnesium).

### Main finding/s:



- Hydration status: there were no significant differences between the two groups for pre-race or post-race body weight, per cent change in body weight, blood volume, plasma volume, or red cell volume
- Serum electrolyte concentrations: the immediate post-race serum sodium concentration was significantly lower ( $p=0.004$ ) and the serum magnesium concentration was significantly higher in the cramp group, than in the control group, but these differences were not clinically significant

### Conclusion/s:

Runners with EAMC participating in an ultra-distance race are not more dehydrated and do not have clinically significant alterations in serum electrolyte concentrations compared with non-cramping runners.

**Evidence based rating:** 7/10 **Clinical interest rating:** 8/10

**Type of study:** Prospective cohort study

**Methodological considerations:** Well-conducted study

**Keywords:** running, muscle, cramping, electrolytes, hydration