

# SportsMedUpdate

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## EVALUATION OF PROTECTIVE EQUIPMENT FOR PREVENTION OF INJURIES IN RUGBY UNION

Marshall SW, Loomis DP, Waller AE, et al. *Int J Epidemiol* 2005;34:113-8

### Background:

The use of protective equipment to decrease the incidence and severity of injuries in rugby union requires further investigation.

### Research question/s:

How effective is protective equipment in reducing the risk of injuries in rugby union?

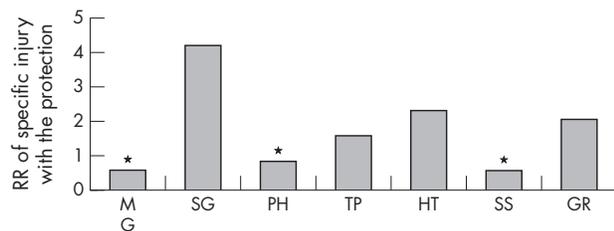
### Methodology:

**Subjects:** 304 rugby players.

**Experimental procedure:** All of the players were assessed pre-season (questionnaire, anthropometry, fitness) and then followed weekly during a club season to assess protective equipment use (expressed as % player weeks used), participation in rugby, and injury outcomes.

**Measures of outcome:** Rate of all injuries (adjusting for covariates such as level of competition, playing position, and injury history) and selected injuries (mouthguard (MG) – teeth, mouth, and jaw injuries; shin guard (SG) – lower leg laceration, abrasion, contusion; padded headgear (PH) – concussion and other scalp abrasions or contusions; taping (TP) – body areas; head tape (HT) – scalp and auricular injury; support sleeve (SS) – sprain to upper limb, knee ankle; grease (GR) – scalp and auricular injury).

### Main finding/s:



- MG appeared to lower the risk of orofacial injury (rate ratio (RR) = 0.56, 95%CI 0.07 to 4.63), PH tended to prevent damage to the scalp and ears (RR = 0.59, 95% CI 0.19 to 1.86), SS tended to reduce the risk of sprains and strains (RR = 0.58, 95% CI 0.26 to 1.27)
- Risk of concussion was not lessened by the use of PH (RR = 1.13, 95% CI 0.40 to 3.16) or MG (RR = 1.62, 95% CI 0.51 to 5.11)
- There was no evidence of protective effects for any other equipment item (TP, SG, and GR)

### Conclusion/s:

- In rugby union, only the following protective equipment appears to reduce the risk of specific injuries: MG (orofacial injuries); PH (scalp and ear injuries); limb sleeves (limb sprains and strains)
- Protective equipment used in rugby union has limited effectiveness in preventing injuries

**Evidence based rating:** 7.5/10 **Clinical interest rating:** 8/10

**Type of study:** Prospective cohort study

**Methodological considerations:** Well conducted study

**Keywords:** protective devices, mouth protectors, contact sports, athletic injuries, brain, concussion

## INTRINSIC RISK FACTORS FOR INVERSION ANKLE SPRAINS IN MALE SUBJECTS. A PROSPECTIVE STUDY

Willems TM, Witvrouw E, Delbaere K, et al. *Am J Sports Med* 2005; 33(3):415-23

### Background:

The intrinsic risk factors for inversion ankle sprains have not been well established through well conducted prospective cohort studies.

### Research question/s:

What are the intrinsic risk factors that might predispose male athletes to acute inversion ankle sprains?

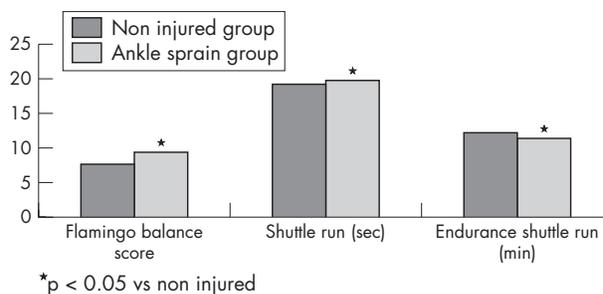
### Methodology:

**Subjects:** 241 healthy non-injured male physical education students.

**Experimental procedure:** All of the subjects underwent comprehensive testing and analysis (anthropometrical characteristics, functional motor performances, ankle joint position sense, isokinetic ankle muscle strength, lower leg alignment characteristics, postural control, and muscle reaction time during a sudden inversion perturbation) at the beginning of their studies. Subjects were exposed to similar sports activities, and were evaluated weekly for 1-3 years to document ankle sprains (18% (44/241) sustained an inversion sprain).

**Measures of outcome:** Comparison between injured (n=44) and non-injured subjects (n=108).

### Main finding/s:



Other intrinsic risk factors for ankle sprains were: decreased dorsiflexion muscle strength, decreased dorsiflexion range of motion, less coordination, and faster reaction of the tibialis anterior and gastrocnemius muscles.

### Conclusion/s:

In a prospective cohort study of previously non-injured male subjects intrinsic risk factors for inversion ankle sprains were: reduced running speed, decreased cardiorespiratory endurance, poor balance, decreased ankle dorsiflexion strength, less coordination, increased muscle reaction, and reduced dorsiflexion range of motion at the ankle.

**Evidence based rating:** 8/10 **Clinical interest rating:** 8.5/10

**Type of study:** Prospective cohort study

**Methodological considerations:** Well conducted study, no cause-effect can be demonstrated

**Keywords:** ankle, sprain, injury, risk, intrinsic factors, functional motor performance, proprioception, muscle strength, alignment, postural control, muscle reaction time

**EFFECTS OF EXERCISE TRAINING ON GLUCOSE HOMEOSTASIS**

Boule NG, Weisnagel SJ, Lakka TA, et al. *Diabetes Care* 2005;28:120-6

**Background:**

It has been suggested that physical training leads to transient improvements in insulin sensitivity or glucose tolerance but that these changes return to pre-training levels within a few days.

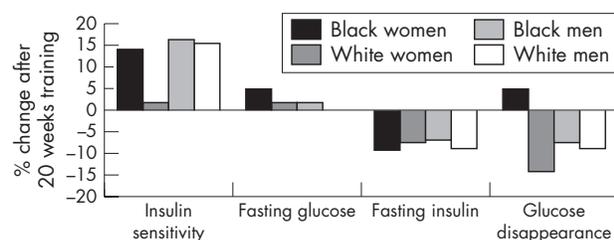
**Research question/s:**

Does 20 week endurance training in healthy, previously sedentary participants alter insulin sensitivity, fasting serum insulin concentration, and glucose disappearance index?

**Methodology:**

*Subjects:* 316 women and 280 men (173 blacks and 423 whites).  
*Experimental procedure:* An intravenous glucose tolerance test (IVGTT) was performed before and after a standardised training programme (exercise on a cycle ergometer 3 days/week for 20 weeks with progressive increase in exercise intensity from 55% VO<sub>2max</sub> for 30 min/session to 75% VO<sub>2max</sub> for 50 min/session).  
*Measures of outcome:* Insulin sensitivity (%), fasting insulin concentration, glucose disappearance index.

**Main finding/s:**



Effects of training: insulin sensitivity increased by 10% (p<0.001) (men more changes than women (p=0.02)), fasting insulin concentration increases were transitory (disappearing after 72 hrs), glucose disappearance index increased (3%, p=0.02).

**Conclusion/s:**

Regular exercise training for 20 weeks (55-75 VO<sub>2max</sub> for 30 min, 3/week) improves virtually all of the variables related to the glucose tolerance test; therefore, regular exercise is recommended for sustained improvements in glucose homeostasis.

**Evidence based rating:** 7.5/10 **Clinical interest rating:** 8/10

**Type of study:** Pre-post intervention study

**Methodological considerations:** Well conducted study

**Keywords:** diabetes mellitus, glucose tolerance, insulin sensitivity, exercise training

**EROSIVE EFFECT OF A NEW SPORTS DRINK ON DENTAL ENAMEL DURING EXERCISE**

Venables MC, Shaw L, Jeukendrup AE, et al. *Med Sci Sports Exerc* 2005;37(1):39-44

**Background:**

Acidic properties of soft drinks such as pH, type of acid, pKa, titratable acidity, and buffering capacity may be associated with the aetiology of enamel erosion.

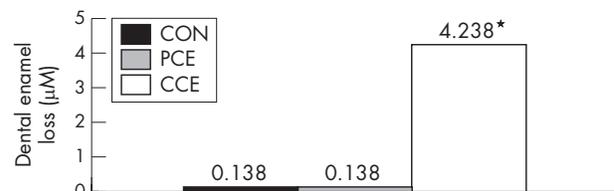
**Research question/s:**

What is potential erosive effect of a prototype carbohydrate-electrolyte drink (PCE) compared with a neutral control (water) and a commercially available carbohydrate-electrolyte drink (CCE) during exercise over a 3 week period?

**Methodology:**

*Subjects:* 19 healthy adults (male = 16; female = 3) took part in this single blind, three-way crossover study.  
*Experimental procedure:* Subjects were given each of the three drinks (a prototype carbohydrate-electrolyte drink (PCE), water (CON), a commercially available carbohydrate-electrolyte drink (CCE)) according to a randomisation schedule, at the beginning of three study periods (exercising for 75 min/day, 5 days/wk for 3 weeks). Each exercise subjects consumed a total of 1400 mL/days before during and after exercise. All of the subjects were fitted with an intra-oral appliance containing two human enamel blocks.  
*Measures of outcome:* Dental erosion (tissue loss from the enamel blocks) by profilometry at the end of each study period.

**Main finding/s:**



**Conclusion/s:**

A commercially available carbohydrate-electrolyte sports drink can result in significantly greater enamel loss (after 3 weeks of consumption during exercise conducted 5/week) compared with water and a newly developed sports drink.

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

**Type of study:** Single blind, randomised controlled clinical trial

**Methodological considerations:** Well conducted study, extrapolation of findings to clinical situation to be considered carefully

**Keywords:** dental erosion, sports drink, pH, exercise