From the journals

Sports medicine current awareness service

Prepared by Kathryn Walter and Nancy Laurenson at the London Sports Medicine Institute (LSMI) Library

The following summaries are taken from a selection of recent journals indexed in the LSMI database. A full listing is published monthly in *Sports Medicine Bulletin*.

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The risk of brain damage associated with repeated trauma from heading a football is evaluated in **Soccer injuries to the brain: A neuropsychologic study of former soccer players** (Tysvaer AT and Lochen EA. *American Journal of Sports Medicine* 1991; **19(1)**: 56–60). Thirty-seven former elite soccer players were individually examined with an extensive battery of psychologic tests. Mild to severe deficits in attention, concentration, memory and judgement were demonstrated in 81% of the players. This may indicate some degree of permanent organic brain damage.

Little is known about the nature and mechanism of sports injuries among disabled sportsmen. The first issue of a new journal contains the results of a retrospective questionnaire survey of 90 wheelchair athletes (**Injury profiles in wheelchair athletes: results of a retrospective survey** McCormack DAR, Reid DC, Steadward RD and Syrotuik DG. *Clinical Journal of Sports Medicine* 1991; **1(1)**: 35–40). Of 346 injuries which were reported in 18 different sports, 107 occurred in basketball, 106 in track and 42 in road racing. Injuries to the soft tissue of the upper extremities were most common. Blisters and abrasions accounted for 47.7% of the injuries. All the athletes surveyed sustained injuries, yet little protective clothing was worn except for gloves. In view of the potentially serious long-term complications of some of these injuries and their effects on daily activites, prompt diagnosis and treatment are mandatory. Despite this, only 30.8% of all athletes sought medical assistance for their injury.

The ergogenic properties of sodium bicarbonate ($NaCO_3$) are investigated in a recent paper by Jon Linderman and Thomas Fahey (**Sodium bicarbonate ingestion and exercise performance: an update** Linderman J and Fahey TD. *Sports Medicine* 1991; **11(2)**: 71–7). The physiological rationale for bicarbonate administration and its effects on power output and exercise endurance are reviewed. Increased lactate production during maximal exercise causes marked decrements in intra- and extracellular pH, which may contribute to the onset of fatigue. HCO_3 is thought to act by buffering H^+ and maintaining a pH gradient between intra- and extracellular compartments. This enhances facilitated transport of intramuscular lactate and H^+ to the extracellular fluid, delaying the onset of critical pH that impairs metabolic and contractile function of muscle. Studies on the effects of $NaCHO_3$ on performance have rendered conflicting results, but the best results seem to be during maximal exercise bouts of between 1 and 7 min.

The paediatric athlete is particularly susceptible to heat and cold related illness (**Heat illness: fluid and electrolyte issues for pediatric and adolescent athletes** Squire DL. *Pediatric Clinics of North America* 1990; **37(5)**: 1085–109). Children are less efficient thermoregulators than adults, due to a lower rate of sweating and greater metabolic heat production per kilogram of body weight. The relatively greater body surface area of young athletes also places them at risk for hypothermia. Heat cramps, heat exhaustion and heat stroke are all types of heat illness: treatment involves rehydration and rapid reduction of body temperature. Prevention of heat illness focusses on modifying physical activity when dangerous environmental conditions exist, maintaining adequate hydration, wearing appropriate clothing, encouraging pre-season conditioning and allowing adequate heat acclimatization.

The relationship between effects in performance and the manifestation of overtraining syndrome symptoms is discussed in **Physiological and performance responses to overtraining in elite judo athletes** Callister R, Callister RJ, Fleck SJ and Dudley GA. *Medicine and Science in Sports and Exercise* 1990; **22(6)**; 816–24). Fifteen elite judo athletes were examined at 2 week intervals during 10 weeks training. Weeks 1–4 involved the athletes regular training regimens; interval and resistance training volumes were increased by 50% in weeks 4–8 and judo training was increased by 100% in weeks 9–10. Isokinetic elbow and knee strength increased significantly from weeks 2–4, was unchanged in weeks 4–8 and decreased significantly in weeks 9–10. Total 300 m interval times increased significantly during weeks 2–4 and 4–8 and did not change in weeks 9–10. Fifty metre sprint time was unchanged in weeks 2–8 but improved significantly in weeks 8–10. Body weight, aerobic power, resting blood pressure, resting heart rate and exercising blood lactates did not change significantly during the study. Six weeks of overtraining may thus affect some aspects of peformance. Performance may be affected before symptoms of overtraining appear.

The decline in functional capacity of the elderly is a serious problem which merits attention, especially in our ageing population. Two research studies which have looked at training adaptations in healthy 60–70-year-old men report encouraging findings. In **Positive adaptations to weight-lifting training in the elderly** (*Journal of Applied Physiology* 1990; **69(5)**: 1725–33), Alan B. Brown and colleagues found that older men responded to 12 week weight-lifting training in a qualitatively similar manner as young men, with large increases in the maximal load that could be lifted and accompanying enlargement of whole muscle and muscle fibre areas. There was a high degree of specificity in the training response. Strength performance measured on the training device (multistation weight-lifting machine) increased far

more than in the less familiar isometric and isokinetic tests. Indeed, isometric and isokinetic performance failed to increase significantly despite a large (48%) increase in weight-lifting performance and a substantial 17% increase in muscle hypertrophy. The observed specificity points to the important role of nervous system adaptations in the response to strength training, in particular, the role of learning and coordination. The implication for the design of strength-training programmes for the elderly is that exercise should simulate as closely as possible the most common strength requiring tasks likely to be encountered by this population. Many factors contribute to increases in exercise capacity with endurance training, but the extent to which different mechanisms may contribute to such increases in older individuals is poorly understood. The primary aim of the next study, **High-intensity endurance training in 20- to 30- and 60- to 70-year-old healthy men** Makrides L, Heigenhauser JF and Jones NL. *Journal of Applied Physiology* 1990; **69(5)**: 1792–8) was to investigate the effects of high-intensity exercise training in elderly (but healthy) sedentary individuals and identify the relative contribution of a number of physiological factors to any increases in maximal power and V_{O_2} measured during cycle ergometry. The results indicate that high intensity training at 85% of maximum heart rate is capable of producing marked improvements in aerobic capacity (38%) in older subjects. This is associated with increases in vascular conductance, maximal cardiac output, stroke volume and aerobic muscle power without influencing the reduced muscle strength that is associated with ageing.

R. J. Shephard has examined the literature in **Physical activity and cancer** (*International Journal of Sports Medicine* 1990; **11(6)**: 413–20) in an attempt to better understand the influence of physical activity upon the risk of death from neoplasia as well as its impact upon prognosis after a neoplasm has been diagnosed. In answering the first question epidemiological evidence is reviewed: of seven major occupational studies five suggest that a physically active occupation offers some protection against colon cancer. An application of Bradford Hills criteria generally supports this causal relationship. Yet, existing reports are by no means conclusive and further epidemiological work including careful case control studies seems justified. Data from one laboratory also suggests that in women a history of active leisure is associated with reduced prevalence of breast and reproductive system cancers. This may be because activity potentially encourages a healthy lifestyle. Thus, it could have a more direct effect on certain forms of carcinogenesis. Finally, there has been almost no research on the role of exercise in the treatment of the cancer patient. However, due to its mood elevating effect, appetite stimulation, conservation of lean tissue and many other positive effects, the contribution of exercise to the treatment of cancer merits further examination.

As warmer temperatures appear, bicycles come out of the garage. This seasonal expectation, coupled with the increasing participation in cycling, warrants attention to the traumatic and overuse injuries experienced by cyclists. Morris B. Mellion reviews **Common cycling injuries: management and prevention** in *Sports Medicine* 1991; **11(1)**: 52–70. This paper concentrates on familiarizing the reader with the bicycle and its components, the proper fit including adjustment to frame size, saddle height, angle and position, and handlebar height and reach as well as an understanding of gearing and pedalling cadence with respect to preventing both acute and chronic injuries. In addition, the management of chronic injuries which are sustained through improper fit or overuse is well described. Finally, the need for safety equipment and protective clothing is discussed.

Exercise related incontinence in women is a rarely discussed problem, but in a recent survey in America (**Limiting bladder leaks** *Physician and Sportsmedicine* 1991; **19(1)**: 15–16) 33% of women who undertook exercise experienced some leakage while exercising. Activities such as running and high impact aerobics were the two most likely forms of exercise to cause leakage. In addition, propensity to leak increases with the number of vaginal births a woman has had. Incontinence, however, can be reduced by strengthening the muscles of the pelvic floor with Kegel exercises. Easy enough to advise!

Tarsal tunnel syndrome is occuring with increasing frequency in the athletic population, especially in the running athlete. David L. Jackson and Birgit Haglund (**Tarsal tunnel syndrome in athletes: case reports and literature review** *American Journal of Sports Medicine* 1991; **19(1)**: 61–5) present two cases of tarsal tunnel syndrome and discuss the aetiology, symptoms, differential diagnosis and management of this often underdiagnosed entity. In the athletic population foot and heel pain is a common occurrence, therefore it is important to differentiate between plantar fascitis and tarsal tunnel syndrome which have similar symptoms. Abnormal foot mechanics, especially increased valgus deformity, appear to be the major aetiologic factor. Electrodiagnostic studies are helpful in order to properly diagnose tarsal tunnel syndrome and should include measurements of both the medial and lateral plantar nerves (motor and sensory function) as well as EMG analysis of muscles in the foot and leg. Proper management involves correcting the excessive pronation where necessary, and includes treating the runner with ice, NSAIDs, steroid injection and flexibility exercises.

It has been a long held view that the protein requirements of the body do not significantly increase during heavy exercise. This doctrine has been critised in **Protein as an energy substrate during intense exercise** (Kaufman DA. *Annals of Sports Medicine* 1990; **5**: 142–3). The author cites several recent studies which refute this statement. One study has shown that runners completing a 10 mile training run in approximately 60 min catabolized an average of 57 g of protein which accounted for 18% of calories used. Well trained athletes catabolize proportionally much more protein during an endurance workout than an athlete who is only moderately trained. It has been suggested that a daily protein intake of 145 g is needed to maintain a slight positive nitrogen balance in competitive weight lifters while other authors suggest 2 g/kg/day to increase muscle mass. It is postulated that the contribution of amino acids to substrate usage during exhaustive exercise is approximately 10%, certainly a significant amount when it comes to heavy training and performance.

BASM Education Programme

All details from: BASM Education Officer, c/o LSMI, St. Bartholomews Medical College, Charterhouse Square, London EC1M 6BQ, UK. Tel: 071-253 3244; Fax: 071-251 0774

Date	*Course*	*Venue*
1991		
June 14–16	Advanced Injury Module: Chronic and Overuse Injuries	Hillingdon Hospital
September 29–October 4	BASM Introductory Sports Medicine Course	Lilleshall
November 8–10	**BASM 1991 Annual Congress, sponsored by Lederle Laboratories. Details from: John Clegg, Birch Lea, 67 Springfield Lane, Eccleston, St. Helens, Merseyside WA10 5HB, UK. Tel: (0744) 28198**	**Lowwood Hotel, Windermere, Cumbria**
November 22–24	Advanced Physiology Module	BOMC, Harrow

LSMI Open Lectures, 7.15pm Wednesday evenings in term.
Details from: Academic Secretary, LSMI, St. Bartholomew's Medical College, Charterhouse Square, London EC1M 6BQ, UK. Tel: 071-251-0583

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(The University of Edinburgh,
The Royal College of Physicians of Edinburgh
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SPORTS MEDICINE COURSE
9th–13th September 1991

An intensive lecture, demonstration and practical course designed for Doctors actively involved in Sports Medicine. This course is suitable preparation for Doctors interested in sitting the Scottish Royal Colleges' Diploma in Sports Medicine. A limited number of places may also be available for qualified physiotherapists and coaches. The venue for this course will be Moray House College of Education, Cramond Campus, Cramond Road North, Edinburgh.

Fee: £200 (payable only after confirmation of place on course)

Closing date for applications end June 1991

This course has PCEA approval for 10 Sessions.

Applications to: **Community Activities**
(Sports Medicine Course)
Moray House College
Cramond Campus
Cramond Road North
Edinburgh EH4 6JD

Notes for Authors

Scope
The British Journal of Sports Medicine covers all aspects of sports medicine and science – the management of sports injuries; all clinical aspects of exercise, health and sport; exercise physiology and biophysical investigation of sports performance; sports psychology; physiotherapy and rehabilitation in sport; and medical and scientific support of the sports coach.

Types of paper
Original papers (not normally over 3000 words, full length accounts of original research)
Review articles (up to 4000 words, providing concise in-depth reviews of traditional and new areas in sports medicine)
Case reports (up to 1000 words, describing clinical case histories with a message).

Refereeing
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Drawings and graphs should be on heavy white paper/card or blue-lined coordinate paper using black ink. Label axes appropriately and clearly. Please use a selection of the following symbols: +, ×, □, ○, △, ▽, ■, ●, ▲, ▼. Photographs should be of fine quality, large glossy prints suitable for reproduction and the top should be indicated. Negatives, transparencies or x-ray films should not be supplied, any such material should be submitted in the form of photographic prints. Authors are asked where possible to draw diagrams to one of the following widths, including lettering, 168 mm, 354 mm. During photographic reproduction, the diagrams are reduced to ½ their size. The maximum depth at drawn size is 500 mm. Authors are asked to use the minimum amount of descriptive matter on graphs and drawings but rather to refer to curves, points etc. by symbols and place the descriptive matter in the caption. Three copies of each illustration are required and these should be numbered in a consecutive series of figures using Arabic numerals. Legends should be typed in double spacing on a separate page but grouped together. Each figure should be identified on the back – figure number and name of the author. Figures which have been published elsewhere should be accompanied by a form of permission to reproduce, obtained from the original publisher.

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21 Sperryn, P.N. *SpoA and Medicine* Butterworths, UK 1983
22 Ellitsgaard, N. and Warburg, F. Movements causing ankle fractures in parachuting. *Br J. Sports Med* 1989, **23**, 27–29

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Tables should be typed on separate sheets together with a suitable caption at the top of each table. Column headings should be kept as brief as possible, and indicate units of measurement in parentheses. Tables should not duplicate information summarized in illustrations.

Footnotes
Footnotes should be used sparingly. They should be indicated by asterisks (*), daggers (†), and double daggers (‡), in that order. In the manuscript, a footnote should be placed at the bottom of the page on which it is referred to and separated from the main text by a horizontal line above the footnote. Footnotes to tables should be placed at the bottom of the table to which they refer.

Drugs, Abbreviations and Units
Drugs should be referred to by their approved, not proprietary, names, and the source of any new or experimental materials should be given. If abbreviations are used these should be given in full the first time they are mentioned in the text. Scientific measurements should be given in SI units, but blood pressure should continue to be expressed in mm Hg.

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Submission
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