Effects of fatigue on ankle stability and proprioception in university sportspeople

Objectives
To assess the effect of fatigue from sporting activity on ankle stability and proprioception in university sportspeople. A wide range of sporting activity was included from taekwon-do to indoor football.

Methods
Subjects were recruited from Southampton University sports facilities. They agreed to perform two dynamic tests before and after they took part in sport. (1) A horizontal hop test starting and finishing on the same foot. The best distance from three attempts was recorded. (2) A hexagonal hop test: the subjects hopped around a hexagon marked on the ground in either a clockwise or anticlockwise direction as quickly as possible. The quickest attempt out of three was recorded.

Results
The means before and after exercise were compared using a Student’s t test. Both tests were set at the 5% significance level.

Hexagonal hop test (n = 40)
A Student’s t test was used to compare the best time for the hexagonal hop test before and after exercise. The t value was 3.95, indicating a significant improvement in hop time after exercise.

Horizontal hop test (n = 25)
At the 5% level, the data are insignificant, with a t value of 0.1107. A general trend of increased distance after exercise (fatigue) was observed (mean of 1.176m after against 1.775m after).

Conclusions
The results show that the subjects made significant improvements in hexagonal hop times with no difference in the distance hopped. This leads to the conclusion that, despite muscular fatigue, ankles appear to be more stable after exercise. Does exercise induce an increase inafferent/effferent nerve impulses to and from muscle spindles around the ankle leading to improved joint position sense?

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Centripetal skater’s manual oedema
This doctor’s indulgence in rigorous physical activity led to the realisation of a novel clinical entity. As an active sportsman and ex-ice hockey player, currently living in a hot climate, I have had to sublimate my sporting activities to infrequent inline roller skate street journeys. Recently, on a day of a very pressed schedule, I attempted to concentrate a week’s exercise into one concise session. After an hour and a fifteen minutes of intense exertion, rapidly skating up and down hills and valleys, over good and not so good paved surfaces, I experienced an unexpected heaviness and tightness in the tips of my fingers. Later I noticed that the simple task of clenching my fists was not fully possible, and this was more accentuated in the right hand (the more dominant of the two). Within the course of a couple of hours the whole condition spontaneously subsided.

I had never previously suffered such events, no concurrent pathology existed in any body system, and I have remained healthy since. The working hypothesis to explain this phenomenon must be that the rhythmic swaying and waving of the outstretched arms in a circular arc resulted in increased centripetal force of hydrostatic pressure in the distal parts of the upper limbs. This overwhelming pressure overcame the compensation mechanism of the lymphatic system to drain the hands.Axillary pressure from the straps of a small backpack carried during the whole journey may have compounded the effect, although all it contained was a mobile telephone and a small bottle of water.

Bizarre and not always innocent diagnoses have been made in the pathogenesis of limb oedema.1 The resulting hydrostatic effects of physical exertion of the lower limbs are well documented.2-4 Possible reasons why this problem does not occur during ice skating are the fact that long distances without any stops are uncommon and the cold environment may provide protection through peripheral vasoconstriction.

Thus heavy roller skating is a thought to entertain a doctor’s mind when confronted with a patient with acute unexplained bilateral hand oedema.

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References

Intense training in elite female athletes: evidence of reduced growth and delayed maturation?
In their recent article Intensive training in elite young female athletes, Baxter-Jones and Maffulli reviewed 18 studies and concluded that training does not appear to affect growth and maturation.1-3 We have two concerns about this conclusion. Firstly, we agree that analyses of cross sectional and cohort data in this population are confounded by sampling bias; gymnasts who are successful at an elite level are likely to be self selected by their small stature and delayed maturation. Furthermore, data from cross sectional and cohort studies are often averaged. This “group” approach provides little information about individual growth patterns. Thus, in the review of Baxter-Jones and Maffulli, and the literature at large, an important basic question has been overlooked: is there any evidence that growth and/or maturation are adversely affected in some athletes and if so, what is the frequency of this condition?

Secondly, in contrast with their findings, our analysis of over 35 clinical reports (cross sectional, historical, and prospective cohort studies) indicates that elite level gymnasts may be at risk of adverse effects on growth.2 We reported that the increased magnitude of the delay in skeletal maturation with training in an adolescent female gymnast coincided with the occurrence of catch up growth during periods of reduced training or retirement, provides evidence that growth and maturation may be affected in some instances.2 Furthermore, in contrast with the interpretation made by Baxter-Jones and Maffulli of our data, we did report an association between reduced growth and years of gymnastic training, and that the deficits were greater at the growth plates of the proximal femoral epiphyses. This is in line with the occurrence of growth failure in gymnasts who restricted energy intakes appeared to be at greatest risk.

We agree with Baxter-Jones and Maffulli that a cause-effect relation between gymnastics training and inadequate growth of girls has not been shown; there have been no randomised controlled trials. However, this does not mean there is “no evidence for inadequate growth among female gymnasts.” Further, the data are coerced by group means and ignore variability about the mean, then gymnasts who are at increased risk of reduced growth may be overlooked. We recommend that the growth of all young elite female gymnasts should be monitored regularly. Any gymnast who falls behind in growth—that is, across two major centiles of the growth chart—should undergo a complete evaluation for underlying pathology even when height is below the fifth centile. This may be normal short stature, but the clinical criterion warrants assessment.

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References
Spoilsports (understanding and preventing sexual exploitation in sport)


The book is targeted at everyone involved in sport: coaches, doctors, scientists, administrators, parents, and participants.

Celia Brackenridge is internationally acclaimed for her work in uncovering the story of sexual exploitation in sport and offering explanations about why it occurs. She is uniquely qualified by her professional expertise as a scholar in the sociology of sport and by her own experience as coach and athlete at elite level in the sport of lacrosse. It is very brave to pursue a line of research that almost always creates immediate resistance from the audience (“...that can’t be happening in our sport/profession”). It is also personally harrowing to investigate this issue with the victims and to find support to cope with what is heard. The production of this book is therefore a culmination of several years of difficult research. It is clear to me that all of us involved in sport must read this book and be aware of the issues. Those of us in higher education must also put this book on the reading list for “ethical issues” topics in curricula for all sport related degrees.

The title is great. Sport should be fun and run within a set of rules that are clear to all. But sexual exploitation within sport is a breach of rules and most certainly will spoil sport (and lives) for many (and who knows how many) individuals. The first two parts of the book provide evidence for the complex issue of sexual exploitation in sport and reasoning about why it may occur. If anyone reads this and continues to think that sexual exploitation cannot be happening in their sport or profession because there are no specific examples, then they must think again. Evidence suggests that exploitation will be happening in all areas of sport, and Brackenridge challenges us to become aware of that and then to take steps to prevent it. The third and fourth parts of the book offer a challenge to change the way sport is managed and how researchers can assist in this change in order that sexual exploitation is dealt with. This book is a brilliant example of “building bridges between theory and practice” (page 236) and utilises the feminist perspective of “praxis”. (A definition of feminist praxis is... the coming together of theory and practice in action, and in the reflecting upon these processes to generate new ideas and ways of working”). The major message is that gender/power relations need to be examined in sport, and an empowerment based approach to sports leadership promoted.

Sports Medicine Course
3-10 August 2002, Vancouver, Canada
Further details: Cathy Means; tel: +1 608 263 6637; fax: +1 608 262 8421; email: cmmeans@facstaff.wisc.edu

XVI IEA World Congress of Epidemiology
18-22 August 2002, Montreal, Canada
Further details: Conference Secretariat, Events International Meeting Planners, 759 Square Victoria, Suite 300, Montreal, Quebec, H2Y 2J 7, Canada; tel: +1 514 286 0855; fax: +1 514 286 6066; email: info@eventsinvt.com
Web site: www.iea2002.com

Kinesiology—New Perspectives.
3rd International Scientific Conference
25-29 September 2002, Opatija, Croatia
Further details: Conference Office, Faculty of Kinesiology, 10,000 Zagreb, Horvatskih zavoj 15, Croatia; tel: +385 1 3658 666; fax: +351 3634 146; email: natalja.babic@ffk.hr

Evening Tutorials II: The ankle, anatomy, examination, biomechanics, surgical procedures, and rehab, with practical sessions
Autumn 2002, Edinburgh
Further details: Dr Faith Gardner, 73a London Rd, Kilmarndon, Ayrshire; tel: (0)1563 537306

The Queen’s Golden Jubilee and Post Commonwealth Games
BASEM Congress 2002
10-13 October 2002, The Low Wood Hotel and Conference Centre, Windermere, Cumbria, UK
Keynote lecturers
Professor Stuart M McGill (Canada), will lecture on “Low back exercise: the foundation for building the best programme” and present a workshop on “a programme to enhance spine stability”. Assistant Professor Karim Khan (Canada), will lecture on “Better management of tendinopathies” and “Physical activity and bone health”. Other speakers include:
- Professor Dr med Hans H Paessler (Germany) lecturing on “Current concepts in knee ligament reconstruction following sports injuries” and “Rehabilitation after cruciate ligament reconstruction”; Mr Peter Hamlyn (United Kingdom), Chairman of the Government Ministerial Working Group. Report on Safety and Medicine in Sport, will open and Chair a discussion on progress one year from from the report.
A full programme is available on our web site www.bjspmed.com.
Further details: Ms Sue Roberts, BASEM Company Office, 12 Greenside Ave, Frodsham, Cheshire WA9 7SA, UK; tel:fax: +44 (0)1928 732 961; email: basemoffice@compuserve.com
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Sports Medicine of Australia 2002
12-16 October 2002, Carlton Crest Hotel, Melbourne, Australia
Keynote speakers include Dr Bill Evans, Professor Tom Rowland, and Dr Glenn Singleton.
Further details: Kate Gulliver, Sports Medicine Australia, PO Box 237, Dickson ACT 2602; tel: +02 6230 4650; fax: +02 6230 9508; email: sma.conf@sma.org.au; Carlton Crest Hotel contact details: 69 Queens Road, Melbourne VIC 3004, Australia; tel: +61 3 9526 7470; fax: +61 3 9526 7400.

Celebrating 50 years of Orthopaedics in Singapore
13-16 October 2002, Singapore
In conjunction with the 25th Singapore Orthopaedic Association Meeting, 22nd Asian Orthopaedic Association Meeting, 5th Combined Meeting of Spinal and Paediatric Sections—APOA, 7th Meeting of Sports Medicine Section—APOA, 3rd Meeting of Asia-Pacific Orthopaedic Society for Sports Medicine.
Further details: 2002 COM Secretariat, c/o Dept of Orthopaedic Surgery, National University Hospital, 5 Lower Kent Ridge Road, Singapore 119074, Republic of Singapore; tel: +65 772 4340; fax: +65 778 0720; email: secretariat@osa.org.sg

BASICS Immediate Care Course
21-25 October 2002, Madingley Hall, Cambridge, UK
This five day residential course is primarily aimed at those with extensive experience in immediate care; this course will develop and enhance the necessary skills to deal with all medical and other emergencies in pre-hospital medicine.
Further details: BASICS Education Ltd; tel: +44 (0) 870 165 4999; fax: +44 (0)870 165 4949; email: educ@basics.org.uk
Web site: www.basics.org.uk

BASICS Immediate Care Course “Top up”
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The 5th Asian Federation of Sports Medicine Congress
24–27 October 2002, Seoul, South Korea
Further details: AFSMC, 2002 Seoul Secretariat, Hanim Travel Service Ltd, (c/o Young CHANG) Marine Center New Bldg 5th Fl, #51, Sonogy-dong, Chung-gu, Seoul 100–770, South Korea; tel: +822 726 5555; fax: +822 778 2514; email: ycchang@kaltour.com; Web site: http://www.afsmc2002.or.kr

Australian College of Sports Physicians (ACSP) 2002 Conference in conjunction with the New Zealand Sports Medicine Conference
30 October–3 November 2002, Christchurch, NZ
Keynote speaker will be Assistant Professor Karim Khan from Vancouver, Canada.
Further details: Rob Campbell; email: rcampbell@sportsmed-nz.co.nz; Web site: www.acsp.com.au

Skills Course in Musculoskeletal Ultrasound
6–8 January 2003, Oxford, UK
Further details: Alison Davies, Department of Radiology, Nuffield Orthopaedic Centre, Headington, Oxford, OX3 7LD, UK; tel: +44 (0)1865 227765; fax: +44 (0)1865 227347; email: alison.davies@noc.anglox.nhs.uk
Web site: www.acsp.org.uk

BASICS Refresher course
28–29 November 2002, Maddingly Hall, Cambridge, UK
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2nd World Congress of Science and Medicine in Cricket
4–7 February 2003, University of Port Elizabeth, South Africa
Further details: Dr Richard Stretch, University of Port Elizabeth, PO Box 1600, Port Elizabeth 6000, South Africa; tel: +27 41 5042584; fax: +27 41 5832605; email: sparas@upe.ac.za

Vth World Congress on Science & Football
April 2003, Lisbon, Portugal
Further details: Dr J Cabri; email: J.cabri@fmh.utl.pt; Web site: http://www.fmh.utl.pt/wesf

3rd Québec International Symposium on Cardiopulmonary Rehabilitation Evidence Based Interventions: Science to the Art
11–13 May 2003, Québec City Convention Center, Québec, Canada
Call for abstracts deadline is 1 November 2002. The abstract submission form and complete programme can be printed from the web site.
Further details: email: jean.jobin@med.ulaval.ca; Web site: www.ulaval.ca/symp-rehab

The 6th STMS World Congress on Medicine and Science in Tennis in conjunction with the LTA 2004 Sports Science, Sports Medicine, and Performance Coaching Conference
Keynote speakers include Professor Per Rensstrom (SWE), Professor Peter Joki (USA), Professor Savio Woo (USA), Dr Carol Otis (USA), Dr Mark Safran (USA), Dr Ben Kibler (USA), Prof Bruce Elliott (AUS), and Professor Ron Mughan (UK).
Further details: Dr Michael Turner, The Lawn Tennis Association, The Queen’s Club, London W14 9EG, United Kingdom; email: michael.turner@lta.org.uk

Diploma in Sport and Exercise Medicine for Great Britain and Ireland
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www.basem.co.uk
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