

Clare E Milner PhD
Post-doctoral Research Fellow

Department of Physical Therapy,
University of Delaware

PROFESSIONAL EXPERIENCE

- 2003 - date **Postdoctoral Research Fellow**,
Department of Physical Therapy, University of Delaware, USA.
Biomechanical factors in the etiology of tibial stress fractures (Dr Irene Davis).
- 2000 - 2003 **Research Fellow/ Lecturer** (Senior Research Fellow from 2002),
Centre for Sport & Exercise Science, Sheffield Hallam University, UK.
Biomechanics and injury analysis (Prof Roger Bartlett).
- 1999 - 2000 **Postdoctoral Research Fellow**,
Center for Locomotion Studies, Penn State University, USA.
Measurement of recovery of function after total knee replacement (Prof Peter Cavanagh).

EDUCATION

- 1999 **PhD, University of Leeds**, Biomechanics, *Hindfoot motion during gait*.
- 1996 **MSc, University of Leeds**, Anatomy, *Morphometric analysis of the ankle joint and its associated ligaments*.
- 1995 **BSc (Hons) 2i, University of Durham**, Biological Sciences.

TEACHING EXPERIENCE

MSc Sport & Exercises Science

Reducing injury through biomechanics – Unit leader 2000/01 to 2002/03. I also developed and wrote this unit.
Biomechanical analysis of movement – Unit leader 2002/03.
MSc Biomechanics pathway leader.
Dissertation supervisor.

Level 3 BSc Sport & Exercise Science

Sports biomechanics 2 – Unit leader 2002/03.
Dissertation supervisor.

PhD student supervisor (advisor).

FUNDING OBTAINED

In my current position at the University of Delaware, I have contributed to the preparation of several grant applications to the National Institutes of Health and the Department of Defense.

- 2003 International conference attendance grant, UK Sport. £765
- 2002 *Development and validation of a model and marker set for whole body*

	<i>three-dimensional motion capture</i> , Motion Analysis Corporation and Sheffield Hallam University Research Studentships Competition	£41 000
2002	Biomechanical testing of running shoes, Which? Magazine (as Injury Analysis Team Leader).	£13 400
2001	<i>An investigation into the effects of different playing surfaces on soccer specific movements</i> , Football Association (as Injury Analysis Team Leader).	£12 200

PUBLISHED MANUSCRIPTS

Wheat J S, **Milner C E**, Bartlett R M and Mullineaux D R (2003) The effect of different surfaces on ground reaction forces during running: A single-individual design approach. *Journal of Human Movement Studies* **44**, 353-364.

Milner C E and Soames R W (1998) A comparison of four in vivo methods of measuring tibial torsion. *Journal of Anatomy* **193**, 139-144.

Milner C E and Soames R W (1998) Anatomy of the collateral ligaments of the human ankle joint. *Foot and Ankle International* **19**, 757-760.

Milner C E and Soames R W (1998) The medial collateral ligaments of the human ankle joint: anatomical variations. *Foot and Ankle International* **19**, 289-292.

Milner C E and Soames R W (1997) Anatomical variations of the anterior talofibular ligament of the human ankle joint. *Journal of Anatomy* **191**, 457-458.

PUBLISHED ABSTRACTS

Milner CE, Davis IS and Hamill J (2004) Does sustaining a lower extremity stress fracture alter lower extremity mechanics in runners? *Proceedings of the American Society of Biomechanics XIXth Congress*, 314-315.

Davis IS, **Milner CE** and Hamill J (2004) Prospective study of structural and biomechanical factors associated with the development of plantar fasciitis in female runners. *Proceedings of the American Society of Biomechanics XIXth Congress*, 169-170.

Milner C, Davis I and Hamill J (2004) Is free moment related to tibial stress fracture in distance runners? *Medicine and Science in Sports and Exercise* **36**, S57.

Davis I, **Milner C** and Hamill J (2004) Does increased loading during running lead to tibial stress fractures? A prospective study. *Medicine and Science in Sports and Exercise* **36**, S58.

Staerck G N and **Milner C E** (2004) Comparison of two different marker sets for measuring lower body kinematics during walking. *Journal of Sports Sciences* **22**, 243.

Tunstall H and **Milner C E** (2004) Effect of duration of exposure on the rating of footwear comfort during running. *Journal of Sports Sciences* **22**, 260.

Wheat J S and **Milner C E** (2004) Validation of an automated kinematic protocol for the determination of toe-off during overground running. *Journal of Sports Sciences* **22**, 243.

Wheat J S, **Milner C E** and Bartlett R M (2004) Kinematic variability during overground and treadmill running. *Journal of Sports Sciences* **22**, 245.

Wheat J, **Milner C E** and Bartlett R M (2003) Joint coordination variability during overground and treadmill running. *Proceedings of the International Society of Biomechanics XIXth*

Congress, 62.

Milner C E, Wheat J S, Vernon T and Mickelborough J (2003) Validation of a kinematic protocol for the determination of gait events during overground and treadmill running. *Gait and Posture*, **18**, S43-44.

Milner C E, Vernon T and Mickelborough J (2003) Validation of a kinematic protocol for determining gait events during treadmill locomotion. *Journal of Sports Sciences* **21**.

Wheat J, Bartlett R and **Milner C E** (2003) Continuous relative phase calculation: phase angle definition. *Journal of Sports Sciences* **21**, 253-254.

Wheat J, Mullineaux D R, Bartlett R M and **Milner C E** (2002) Quantifying variability in coordination during running. *Scientific Proceedings of the XXth International Symposium on Biomechanics in Sports* 519.

Milner C E (2002) The future of sports biomechanics. *Proceedings of the Seventh International Sports Sciences Congress*.

Milner C E and Soames R W (2002) Three-dimensional hindfoot kinematics during treadmill walking and running. *Journal of Sports Sciences* **20**, 13-14.

Wheat J, Bartlett R M, **Milner C E** and Mullineaux D R (2002) The effect of three different surfaces on ground reaction forces during running. *Journal of Sports Sciences* **20**, 15-16.

Mickelborough J M, Hutchins S and **Milner C E** (2001) Validation of a method of timing foot contact events in gait from kinematic data. *Proceedings of the First Salford Conference on Biomechanics of the Lower Limb in Health, Disease and Rehabilitation* 158.

Cavanagh P R, Christina K A, **Milner C E**, Okita N, Piazza S J and Startzell J K (2001) MAREy: A package of Motion Analysis Routines for three dimensional segmental and joint dynamics in MATLAB *Proceedings of the XVIIIth Congress of the International Society of Biomechanics*, 96.

Milner C E, Bezodis I N and Cavanagh P R (2001) Stair negotiation before and after total knee arthroplasty: ground reaction forces during the early post-operative period. *Proceedings of the XVIIIth Congress of the International Society of Biomechanics*, 312.

Milner C E and Soames R W (2001) Three-dimensional kinematics of normal hindfoot motion during walking and running. *Gait and Posture* **13**, 263.

Milner C E and Soames R W (1996) Morphometry of the collateral ligaments of the human ankle joint - a preliminary study. *Annals of Human Biology* **24**, 273-274.

Milner C E and Soames R W (1996) Development of a technique for the three-dimensional reconstruction of the trochlear surface of the talus. *Annals of Human Biology* **24**, 279.

OTHER PUBLICATIONS

Milner C E (2004) Motion analysis using online systems. In: Payton C and Bartlett R (Eds.) *Biomechanical Analysis of Movement in Sport and Exercise*, Taylor and Francis, UK. In press.

Milner C E (2004) 42 separate entries (27 000 words) in anatomy and biomechanics. In: Bartlett R, Gratton C and Rolf C (Eds.) *Encyclopedia of International Sports Studies*, Routledge, UK. In press.

Biomechanical Factors in the Etiology of Tibial Stress Fractures, Fourth Annual Report. (2004) Prepared for the U.S. Army Medical Research and Materiel Command, Fort Detrick, MD, award number DAMD17-00-1-0515.

Biomechanical Factors in the Etiology of Tibial Stress Fractures, Third Annual Report. (2003)
Prepared for the U.S. Army Medical Research and Materiel Command, Fort Detrick, MD, award number DAMD17-00-1-0515.

Milner C E, Tunstall H and Vernon T (2003) Evaluation of Running Shoes for *Which?*
Biomechanical Assessment and User Trials. Report prepared for *Which?* Magazine.

PRESENTATIONS AND WORKSHOPS

The use (and abuse) of advanced three-dimensional motion capture equipment. British Association of Sport and Exercise Science Continuing Professional Development Workshop Programme, 2003 (**Milner C E** and J S Wheat).

The future of sports biomechanics. Invited keynote presentation at the 7th International Sports Sciences Congress, Antalya, Turkey, 2002 (**Milner C E**).

Stair negotiation before and after total knee arthroplasty. Invited seminar at the University of Salford Centre for Rehabilitation and Human Performance Research, 2002 (**Milner C E**).

Falcon real time analogue motion capture system: hardware setup, calibration and data collection, Sheffield Hallam University Staff Training Workshop, 2001, 2002 (**Milner C E**).

Using OrthoTrak: trial preparation, data processing and report generation, Sheffield Hallam University Staff Training Workshop, 2001, 2002 (**Milner C E**).

Using KinTrak, specialised movement analysis software by Motion Analysis Corporation, Sheffield Hallam University Staff Training Workshop, 2001, 2002 (**Milner C E**).

How to use real time streaming from EvaRT into SIMM, Sheffield Hallam University Staff Training Workshop, 2001, 2002 (**Milner C E**).

Interview on Yorkshire TV about running injuries for Calendar Lunchtime News, 2002 (**Milner C E** and Vernon T).

Interview on BBC Radio Sheffield about biomechanics research in the Centre for Sport and Exercise Science, 2001 (Bartlett R M and **Milner C E**)

SERVICE

2002 - 2003 Sheffield Hallam University School of Sport and Leisure Management Research Ethics Committee Member.

2004 - date Manuscript reviewer for *Gait & Posture* journal.

2003 - date Manuscript reviewer for *Sports Engineering* journal.

2004 - date Registered as manuscript reviewer for *Journal of Biomechanics*.

2002 - 2003 Grant reviewer for PPP Foundation (UK).

2002 - 2003 Textbook proposal reviewer for BIOS Publishers Ltd (UK).

TECHNICAL EXPERTISE

Motion analysis: Vicon (Pulnix cameras, M cameras, Real Time system), Motion Analysis Corporation (Falcon Real Time system, KinTrak, OrthoTrak), Qualysis (MacReflex).

Kinetics: Kistler (force plates, Gaitway treadmill), Bertec force plates, PCB uniaxial

accelerometer

Programming: Matlab, LabView, Visual Basic

EMG: MIE telemetered

Video analysis: SIMI, Dartfish

CONTINUING PROFESSIONAL DEVELOPMENT

- 2004 Human Subjects Training Certification, University of Delaware, DE.
- 2003 Pediatric and Adult Foot and Ankle: New Horizons in Clinical Treatment and Innovative Technology, NIH Washington DC, USA.
- 2003 GCMAS Symposium – The Foot: What’s the Next Step?, Wilmington, DE, USA.
- 2002 ISB 3D Movement Analysis Symposium, University of Newcastle, UK.
- 2001 Interpretation of Gait Analysis Data, Children's Hospital, San Diego, CA, USA.
- 2001 PhD Supervisor Development Programme, Sheffield Hallam University, UK.
- 2000 Variability in the Movement System: New Horizons, Manchester Metropolitan University, UK.
- 2000 Teaching and Tutoring in Higher Education, Sheffield Hallam University, UK.
- 1999 Experimental Methods in Biomechanics and Motor Control, Penn State University, PA, USA.

Plus regular attendance at national and international conferences.

PROFESSIONAL MEMBERSHIPS

International Society of Biomechanics (ISB) since 2000.

American Society of Biomechanics (ASB) since 2004.

American College of Sports Medicine (ACSM) since 2004.