

# Michael B. Pohl, Ph.D.

## Curriculum Vitae

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### EDUCATION

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**Doctor of Philosophy**      Biomechanics, University of Leeds, 2006

**Bachelor of Science**      Sport & Exercise Science  
First Class Honours, University of Bath, 2002

### EMPLOYMENT

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**Postdoctoral Fellow**, Running Injury Clinic, University of Calgary. 2008 – present.

**Postdoctoral Fellow**, Department of Physical Therapy, University of Delaware. 2006 – 2008.

**Research Assistant**, Centre for Sport and Exercise Science, Sheffield Hallam University. 2000.

### AWARDS

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NSERC Collaborative Research and Education Training Program – Trainee Travel Award, University of Calgary, June 2010.

AHFMR Interdisciplinary Team Grant in Osteoarthritis – Trainee Travel Award, University of Calgary – University of Edmonton, Jan 2010.

AHFMR Interdisciplinary Team Grant in Osteoarthritis - Trainee Prize: Best Postdoctoral Presentation, University of Calgary – University of Edmonton, 2009.

CODA Motion Best Final Year Student, University of Bath, 2002.

### GRANTS

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**Pohl, M.B.** (\$45,000). Postdoctoral Fellowship Trainee Award Application. The Alberta Osteoarthritis Team: University of Calgary and University of Edmonton (2009-2010). Alterations in hip biomechanics, strength and functional outcomes in patients with patellofemoral osteoarthritis following rehabilitation.

**Pohl, M.B.** (£20,000). PhD Studentship from the Centre for Sports and Exercise Sciences, University of Leeds (2002-2005). Kinematic coupling between the foot and lower limb during gait.

## CURRENT RESEARCH

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The use of muscle strengthening to correct gait mechanics in patients with knee osteoarthritis. Collaborators: Ferber, R., Frank, C. and Lloyd, C.H.

The biomechanical aetiology of patellofemoral pain syndrome in runners. Collaborators: Noehren, B. and Ronsky, J.

Kinematic, kinetic and structural variables associated with overuse injuries in runners. Collaborators: Ferber, R. and Hamill, J.

The relationship between foot structure, muscular strength, and foot biomechanics. Collaborators: Ferber, R. and Rabbito, M.

Kinematic adaptations as a consequence of reducing tibial acceleration using a gait retraining intervention. Collaborators: Crowell, H.P. and Davis, I.S.

The use of a standing MRI unit to quantify patellofemoral joint kinematics during a single leg squat. Collaborators: Noehren, B., Barrance, P. and Davis, I.S.

## PUBLICATIONS

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Ferber, R. and **Pohl, M.B.** (2011). Changes in joint coupling and variability during walking following tibialis posterior muscle fatigue. *Journal of Foot and Ankle Research*, (in press).

**Pohl, M.B.**, Lloyd, C.H. and Ferber, R. (2010). Can the reliability of three-dimensional running kinematics be improved using functional joint methodology? *Gait and Posture*, doi:10.1016/j.gaitpost.2010.07.020.

**Pohl, M.B.** and Farr, L. (2010). The comparison of foot arch reliability measurement using both digital photography and caliper methods. *Journal of Foot and Ankle Research*, 3, 14.

**Pohl, M.B.**, Rabbito, M. and Ferber, R. (2010). The role of tibialis posterior fatigue on foot kinematics during walking. *Journal of Foot and Ankle Research*, 3, 6.

**Pohl, M.B.**, Hamill, J. and Davis, I.S. (2009). Biomechanical and anatomical factors associated with a history of plantar fasciitis in female runners. *Clinical Journal of Sport Medicine*, 19, 372-376.

**Pohl, M.B.**, Mullineaux, D.R., Milner, C.E., Hamill, J. and Davis, I.S. (2008). Biomechanical predictors of retrospective tibial stress fractures in runners. *Journal of Biomechanics*, 41, 1160-1165.

- Pohl, M.B.** and Buckley, J.G. (2008). Changes in foot and shank coupling due to alterations in foot strike pattern during running. *Clinical Biomechanics*, 23, 334-341.
- Pohl, M.B.**, Messenger, N. and Buckley, J.G. (2007). Forefoot, rearfoot and shank coupling: effect of variations in speed and mode of gait. *Gait and Posture*, 25, 295-302.
- Pohl, M.B.**, Messenger, N. and Buckley, J.G. (2006). Changes in foot and lower limb coupling due to systematic variations in step width. *Clinical Biomechanics*, 21, 175-183.
- Pohl, M.** and McNaughton, L. (2003). The physiological responses to running and walking in water at different depths. *Research in Sports Medicine*, 11, 63-78.

#### PAPERS IN REVIEW

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- Rabbito, R., **Pohl, M.B.**, Stefanyshyn, D., Humble, N. and Ferber, R. (2010). Biomechanical and clinical factors related to stage I posterior tibial tendon dysfunction. *Journal of Orthopaedic and Sports Physical Therapy*. (in review).
- Noehren, B., **Pohl, M.B.**, Barrance, P. and Davis, I.S. (2010). Tibiofemoral and patellofemoral alignment during a single leg squat: an MRI study. *The Knee*. (in review).
- Ferber, R. and **Pohl, M.B.** (2011). Changes in joint coupling and variability during walking following tibialis posterior fatigue. *Journal of Foot and Ankle Research*. (in review).
- Park, S.K., Pohl, M.B. and Ferber, R. (2011). The relationship between muscle strength, functional scores, and gait symmetry in patients with knee osteoarthritis. (in review).

#### ABSTRACTS

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- Pohl, M.B.**, Norber, J., Sanchez, Z., Cunningham, T. and Noehren, B. (2010). Are foot kinematics associated with patellofemoral pain in female runners? To be presented at the Annual Meeting of the American College of Sports Medicine. USA: Denver.
- Noehren, B., Norberg, J., Sanchez, Z., Cunningham, T. and **Pohl, M.** (2010). The role of hip and trunk mechanics in female runners with patellofemoral pain. To be presented at the Annual Meeting of the American College of Sports Medicine. USA: Denver.
- Park, S.K., **Pohl, M.B.**, Forkheim, M. and Ferber, R. (2010). The effect of a six week hip strengthening program on pain, functional scores, and gait biomechanics in patients with knee osteoarthritis. To be presented at the Annual Meeting of the Orthopaedic Research Society. USA: Long Beach.
- Pohl, M.B.**, Rabbito, M. and Ferber, R. (2010). The relationship between static arch rigidity and foot kinematics during gait. In Proceedings of the 2<sup>nd</sup> International Foot & Ankle Biomechanics Annual Meeting. USA: Seattle. (Podium)

- Park, SK., **Pohl, M.B.**, Lloyd, C.H., Wiley, P. and Ferber, R. (2010). Effect of hip muscle strengthening on frontal plane gait mechanics in patients with knee osteoarthritis. In Proceedings of the 34th American Society of Biomechanics Annual Meeting. USA: Providence. (Podium)
- Pohl, M.B.**, Lun, V., Wiley, P. and Ferber, R. (2010). Kinematic compensation strategies in patients with medial compartment knee osteoarthritis. In Proceedings of the 2<sup>nd</sup> Joint ESMAC/GCMAS Annual Meeting. USA: Miami. (Podium)
- Lloyd, C.L., **Pohl, M.B.** and Ferber, R. (2010). Can the reliability of three-dimensional gait kinematics be improved using functional joint methodology? In Proceedings of the 2<sup>nd</sup> Joint ESMAC/GCMAS Annual Meeting. USA: Miami.
- Bachand, A., Farr, L., McElroy, L.K., Rabbito, M., **Pohl, M.B.** and Ferber, R. (2010). Reliability and accuracy of a digital photograph method for measuring arch height index and foot structure. *Journal of Athletic Training*, 45, S69.
- Pohl, M.B.**, Rabbito, M. and Ferber, R. (2009). The role of tibialis posterior on foot kinematics during walking. In Proceedings of the 33<sup>rd</sup> American Society of Biomechanics Annual Meeting. USA: Penn State College.
- Pohl, M.B.**, Lloyd, C.H., Marsh, A., Lun, V., Wiley, P. and Ferber, R. (2009). Frontal plane lower extremity gait and muscle strength asymmetry in patients with medial compartment knee osteoarthritis and healthy controls. *Annals Rheumatic Diseases*, 68, S478.
- Noehren, B., **Pohl, M.**, Barrance, P. and Davis, I.S. (2009). Tibiofemoral and patellofemoral alignment during a single leg squat: an MRI study. In Proceedings of the 1<sup>st</sup> International Patellofemoral Joint Research Retreat. USA: Baltimore. (Podium)
- Altman, A., **Pohl, M.**, Barrios, J. and Davis, I.S. (2008). A comparison between single-belt and split-belt treadmill walking. In Proceedings of the North American Congress on Biomechanics. USA: Ann Arbor.
- Willy, R., **Pohl, M.B.** and Davis, I.S. (2008). Calculation of vertical load rates in the absence of vertical impact peaks. In Proceedings of the 32<sup>nd</sup> American Society of Biomechanics Annual Meeting. USA: Ann Arbor.
- Pohl, M.B.** and Davis, I.S. (2008). What strategies do runners utilize to reduce tibial acceleration following a gait retraining protocol? *Medicine and Science in Sports and Exercise*, 40, S19-20. (Podium)
- Altman, A., **Pohl, M.** and Davis, I.S. (2008). A comparison of split-belt and single belt treadmill walking over time. *Medicine and Science in Sports and Exercise*, 40, S59. (Podium)
- Noehren, B., **Pohl, M.**, Barrance, P. and Davis, I. (2008). Relationship between tibio-femoral and patellofemoral alignment during a single leg squat: a preliminary study. *Medicine and Science in Sports and Exercise*, 40, S119. (Podium)

**Pohl, M.B.**, Davis, I.S. and Hamill, J. (2007). Prospective study of kinetic factors associated with tibial stress fractures in runners. In Proceedings of the 31st American Society of Biomechanics Annual Meeting. USA: Palo Alto. (Podium)

**Pohl, M.B.** and Davis, I.S. (2007). Predicting retrospective tibial stress fractures in female runners using kinematic and kinetic variables. *Medicine and Science in Sports and Exercise*, 39, S73. (Podium)

Barrance, P., Barrios, J., Davis, I., Noehren, B. and **Pohl, M.** (2007). Bone surface tracking for standing knee MRI: a validation study. In Proceedings of the 31st American Society of Biomechanics Annual Meeting. USA: Palo Alto.

**Pohl, M.B.** and Buckley, J.G. (2006). Rearfoot, forefoot and shank coupling: effect of variations in foot strike pattern. In Proceedings of the 30th American Society of Biomechanics. USA: Blacksburg.

**Pohl, M.B.**, Messenger, N. and Buckley, J.G. (2005). Changes in foot and lower limb coupling due to systematic variations in step width. In Proceedings of the 3rd International Conference on the Biomechanics of the Lower Limb in Health, Disease and Rehabilitation. UK: Salford.

#### INVITED PRESENTATIONS

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**Pohl, M.B.** (2010). The inter-relationship between structure, strength and foot biomechanics during gait. Presented at the Human Performance Laboratory Seminar, University of Calgary. Calgary: Canada.

**Pohl, M.B.** (2009). Gait retraining: a rehabilitation tool for overuse injuries. Presented at the Human Performance Laboratory Seminar, University of Calgary. Calgary: Canada.

**Pohl, M.B.** (2008). Kinematic coupling between the foot and lower limb during running. Presented at the 11<sup>th</sup> International Conference on Foot Biomechanics and Orthotic Therapy. Vancouver: Canada.

**Pohl, M.B.** (2007). Kinematic coupling between the forefoot, rearfoot and shank during gait. Presented at the 10<sup>th</sup> International Conference on Foot Biomechanics and Orthotic Therapy. San Diego: USA.

#### OTHER PUBLICATIONS

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Rabbito, R., Pohl, M. and Ferber, R. (2010). Biomechanical and clinical factors related to stage I posterior tibial tendon dysfunction. *Pulse Magazine (Sport Medicine Council of Alberta)*, 25(1), 7-8.

Realtime retraining to reduce loading in runners, first annual report. (2008). Prepared for the National Institutes for Health, Bethesda, MD, award number 5R01HD50679.

The use of real-time feedback to reduce lower extremity loading during running in individuals at risk for stress fractures, first annual report (2008). Prepared for the U.S. Army Medical Research and Materiel Command, Fort Detrick, MD, award number Department of Defense W81XWH0710395.

Biomechanical factors in the etiology of tibial stress fractures, final report. (2007). 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, sixth annual report. (2006). Prepared for the U.S. Army Medical Research and Materiel Command, Fort Detrick, MD, award number DAMD17-00-1-0515.

## TEACHING EXPERIENCE

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**Co-Instructor**, Kinesiology, University of Calgary. 2009-present.  
Developed/ presented course content for a biomechanics independent study class.  
Motion Capture and Gait Analysis (KNES 591)

**Invited lecturer**, Kinesiology, University of Calgary. 2010  
Presented lectures for a Clinical Biomechanics course (KNES 503)  
Patellofemoral pain syndrome: aetiology and rehabilitation  
Biomechanics associated with knee osteoarthritis

**Invited lecturer**, Doctorate of Physical Therapy, University of Delaware. 2007  
Lectures given to DPT students:  
Normal gait running mechanics  
Abnormal gait during running

**Invited lecturer**, Biomechanics and Movement Science Program, University of Delaware. 2007  
Lectures given to graduate students:  
An Introduction to Visual3D Analysis Software  
Common Marker Systems for Photogrammetric Gait Analyses

**Teaching Assistant**, School of Sport and Exercise Science, University of Leeds. 2002 – 2005  
Tutorials and laboratory classes were led in the following units:  
Introduction to Statistics and Info Technology (SPSC 1000)  
Introduction to the Mechanics of Sport (SPSC1011)  
Mechanics of Sport (SPSC2111)  
Motor Control: Foundations of Control/ Learning (SPSC1031)  
Motor Control: The Learning Environment (SPSC2031)  
Anxiety, Motivation and Sport Performance (SPSC2041)  
Human Motor Development (SPSC3040)

## PROFESSIONAL ACTIVITIES

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AHFMR Osteoarthritis Team Executive Committee, 2009 - Present

AHFMR Osteoarthritis Team Trainee Leaders Committee, 2008 – Present (Chair since 2009)

Member of the American Society of Biomechanics, 2007 - Present

Member of the Board of the Faculty of Biological Sciences, University of Leeds, 2003- 2004

Postgraduate Student Representative, School of Sport and Exercise Sciences, University of  
Leeds, 2003- 2004

Manuscript Reviewer for:

Clinical Biomechanics

Journal of Biomechanics

Clinical Journal of Sports Medicine

Gait and Posture

Journal of Foot and Ankle Research