CURRICULUM VITAE

Megan Balsdon, P.Eng., B.Sc.(Eng.), M.E.Sc.

(416) 895-7591 | mbalsdon@30fe.com
902 – 40 University Ave., Toronto ON M5J 1T1

EXPERT SUMMARY

Ms. Megan Balsdon is an Associate with the Biomechanics & Personal Injury group, specializing in injury biomechanics. She holds a Bachelor of Science in Engineering from the University of Guelph and Master of Engineering from the University of Western Ontario, where she is currently a Ph.D. candidate in Mechanical and Materials Engineering. Prior to joining 30 Forensic Engineering, Megan gained experience as both a consulting engineer and researcher in the private sector. She is a licensed Professional Engineer in the province of Ontario.

SPECIALIZED PROFESSIONAL COMPETENCIES

- Injury Biomechanics
- Biomechanical Modelling of Human Movement and Injury Causation
- Occupant Motion during Motor Vehicle Collisions
- Seatbelt Use and Effectiveness
- Extremity Injuries

ACADEMIC BACKGROUND

Doctor of Philosophy (Candidate), University of Western Ontario, London, Ontario, In Progress
Thesis: A first-principles theory to describe the physical mechanisms behind the dynamics of a curling stone, supported by experimental examinations.

Master of Engineering Science (Biomechanics), University of Western Ontario, London, Ontario, 2012
M.E.Sc. Thesis: In-vivo investigation of the medial longitudinal arch of the foot and orthotic interactions using bi-planar fluoroscopy.

Bachelor of Engineering Science (Biological), University of Guelph, Guelph, Ontario, 2006

PROFESSIONAL EXPERIENCE

30 Forensic Engineering

Associate, Biomechanics & Personal Injury
2026 – Present, Toronto, ON

- Conduct technical investigations involving the determination of the mechanics of injury, and performance of restraint systems and protective devices

SoleScience Inc.

Research Associate
2013 – 2026, London, Ontario

- Coordinate all research performed in clinic with research volunteers and personnel
- Assisted in comparing foot scanning techniques for fabrication of custom foot orthoses using CAD/CAM methods in a pedorthic fabrication laboratory
- Completed crossover studies including both subjective and objective measures to compare custom foot orthoses, fabricated with offloading features tailored for plantar fasciitis

TLS FORENSIC Engineering Ltd.

Junior Associate (MITACS Fellowship)
January – July 2013, London, Ontario

- Reconstructed motor vehicle collisions using HVE simulation software to determine accelerations of the vehicle occupants, thus establishing biomechanics of their injury
- Reported important findings including assumptions, calculations, and references
- Developed and presented Lunch & Learn and tradeshow presentations for TLS' marketing and business exposure

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

- Professional Engineers Ontario (PEO), Member

AWARDS AND ACHIEVEMENTS

- MITACS Enterprise Fellowship Award
- CIS & OUA Academic All-Canadian athlete, Varsity Curling
- OGS Ontario Graduate Scholarship

PUBLICATIONS AND ACADEMIC SPEAKING ENGAGEMENTS

Peer-Reviewed Research Publications

- Balsdon, M. and Dombroski, C. (2025). "Custom-made foot orthoses with and without heel plugs and their effect on treatment outcomes and plantar pressures in patients with plantar fasciitis: a crossover study." *Prosthetics and Orthotics International, 50*(2): 198-204.
- Balsdon, M. and Dombroski, C. (2022). "Custom-made foot orthoses with and without heel plugs and their effect on plantar pressures during treadmill walking." *Prosthetics and Orthotics International,46*(4):357- 361.
- Balsdon, M., Dombroski, C., Bushey K., and Jenkyn, T.R. (2021). "Impression methods for custom foot orthoses – comparing semi-weightbearing foam and non-weightbearing plaster using a kinematic measurement of the medial longitudinal arch." *Journal of Prosthetics and Orthotics, 33*(1):26-33.

- Balsdon, M., Khan, M., Richards, D. and Dombroski, C. (2021). “Arch Height Index, Arch Rigidity Index and Arch Stiffness Values in a Symptomatic Population.” *Journal of the American Podiatric Medical Association,112*(1):19-154.
- Balsdon, M., and Wood, J. (2020). “Comparing broom conditions in curling: measurements using ice topography.” *Proceedings, ISEA 2020, 49*(1),82:1-6.
- Balsdon, M., Dombroski, C., Bushey K. and Jenkyn, T.R. (2019). “Hard, soft and off-the-shelf foot orthoses and their effect on the angle of the medial longitudinal arch: a biplane fluoroscopy study.” *Prosthetics & Orthotics International, 43*(3):331-338.
- Balsdon, M. and Dombroski, C. (2018). “Reliability of a multi-segment foot model in a neutral cushioning shoe during treadmill walking.” *Journal of Foot & Ankle Research*, 11:60.
- Balsdon, M., Bushey, K., Dombroski, C., Lebel, M.-E. and Jenkyn, T.R. (2016). “Medial Longitudinal Arch Angle Presents Significant Differences Between Foot Types: A Biplane Fluoroscopy Study.” *Journal of Biomechanical Engineering*,138:1-6.
- Van Osch, K., Johnson, M., Balsdon, M., Dombroski, C. and Jenkyn, T.R. (2014). “Investigation of the role of calcaneal dimensions in pes cavus and pes planus.” *The FASEB Journal, 28*(S1).
- Dombroski, C., Balsdon, M. and Froats, A. (2014). “The use of a low-cost 3D scanning and printing tool in the manufacture of custom-made foot orthoses: a preliminary study.” *BMC Research Notes*, 7:443.

Invited Peer Reviewer

- Journal of Foot and Ankle Research
- Journal of American Podiatric Medical Association
- Computer Methods in Biomechanics and Biomedical Engineering
- IEEE Journal of Biomedical and Health Informatics

Invited Speaking Engagements

- Balsdon M. Dombroski C. (2023). Plenary Session. “Treatment of plantar fasciitis with foot orthoses with and without heel plugs during treadmill walking: a crossover study”. Pedorthic Association of Canada Symposium, Niagara Falls, Ontario, Canada.
- Balsdon M. (2013). Keynote lecture. “Is plaster casting necessary?” Pedorthic Association of Canada Symposium: Turning Research into Clinical Pearls, Montreal, Quebec, Canada.
- Balsdon M. Bushey K. (2011). Keynote lecture. “Investigations of in-vivo foot and orthotic interactions using optical motion capture and bi-planar x-ray fluoroscopy”. Foot and Ankle Symposium – Fowler Kennedy Sports Medicine Clinic, London, Ontario, Canada.

Conference Speaking Engagements

- Balsdon, M., Dombroski C. (2021). “Custom-made foot orthoses with and without heel plugs and their effect on plantar pressures”. International Society of Biomechanics, Online.
- Balsdon, M. and Wood, J. (2020). “Comparing broom conditions in curling using measurements of ice topography.” International Sports Engineering Association Conference, Online.
- Balsdon, M. and Wood, J. (2019). “Towards predicting the motion of a curling rock using ice topography.” Canadian Society for Mechanical Engineering Congress, London, Ontario, Canada.

- Balsdon, M., Bushey, K., Dombroski, C., Lebel, M.-E. and Jenkyn, T. (2018). “Medial longitudinal arch angle measure presents significant differences between foot types: bi-plane fluoroscopic RSA study.” Canadian Society of Biomechanics, Halifax, Nova Scotia, Canada (*Speaker: T. Jenkyn*).
- Balsdon, M. and Dombroski, C. (2017). “Reliability of the Oxford Foot Model in a running shoe.” Pedorthic Association of Canada Symposium, London, Ontario, Canada.
- Balsdon, M. and Dombroski, C. (2016). “The effect of casting method for custom orthotics on the MLA angle using biplanar fluoroscopic RSA.” Foot International, Berlin, Germany.
- Balsdon, M. and Dombroski, C. (2016). “Reliability of the Oxford Foot Model in a running shoe.” Foot International, Berlin, Germany.

Conference Poster Participation

- Balsdon, M. and Wood, J. (2019) “The Motion of a Curling Rock: Effects of Sweeping on Ice Topography.” Mechanical and Materials Engineering Graduate Society Research Poster Conference, London, Ontario.
- Balsdon, M., Bushey, K., Dombroski, C. and Jenkyn, T.R. (2012) “Static comparison of subtalar joint neutral and neutral cushioning running shoes to barefoot stance using markerless radiostereometric analysis”. American Society of Biomechanics Conference, Gainesville, Florida, USA.
- Balsdon, M., Bushey, K., Dombroski, C. and Jenkyn, T.R. (2011). “Investigating In-Vivo Motion of the Medial Longitudinal Arch with Different Orthotic Types Using Lateral Fluoroscopy Images During Dynamic Gait”. American Society of Biomechanics Conference, Long Beach, California, USA.