

**Amy Saari, M.A.Sc., E.I.T.**  
**Senior Engineer**

Amy Saari is a Senior Scientist in Synaptic Analysis Consulting Group's Biomechanical Research Division. Ms. Saari investigates issues involving mechanisms and tolerances of traumatic human injury. She has expertise in the area of spine and spinal cord injury as well as the mechanical response of biological tissues to loading. Her work includes analysis of occupational, recreational, and transportation injuries as well as pre-market testing of medical devices, and analysis of failure of orthopaedic devices. Her technical skills include three dimensional kinematics reconstruction, motion measurement and kinematics analysis.

Ms. Saari has also previously held a position as a research engineer at the Department of Mechanical Engineering at the University of Victoria in Victoria, Canada where she assisted in the *in vitro* and *in vivo* testing of a minimally invasive intervertebral disc pressure sensor.

**Education and Awards**

M.A.Sc., Mechanical Engineering, University of British Columbia, Canada, 2007  
B.Sc.(Eng), Biological Engineering, University of Guelph, Canada, 2003

**Selected Publications**

Dennison, C.R., Wild, P.M., Byrnes, P.W.G., Saari, A., Itshayek, E., Wilson, D.C., Zhu, Q.A., Dorak, M.F.S., Crompton, P.A., Wilson, D.R. (2008) Ex vivo measurement of lumbar intervertebral disc pressure using fibre-Bragg gratings. *Journal of Biomechanics*. 41 (1): 221-225.

Crompton P.A., Reed S.G., Saari A. (2006) Musculature Actuation and Biomechanics of the Spine, in *Spine Technology Handbook*. Kurtz SM, Ed. Elsevier Academic Press, USA

Saari, A., Runciman R.J., Hayward, G. (2004) Modeling the bioelectric behaviour of halo pin-patient structures during magnetic resonance imaging. *Proceedings of the Institute of Mechanical Engineering, Part H*. 218(3):159-65.

Saari, A. (2007) Spinal cord deformation during axial impact injury of the cervical spine. M.A.Sc. Thesis, University of British Columbia.

**Selected Presentations**

Greaves CY, Saari A, Crompton PA. A method for estimating stresses in spine fixators in vivo. *Proceedings of the 4th Annual Northwest Biomechanics Symposium*, May 9-10, 2008, Boise, ID, USA

Saari, A., Dennison, C., Wild, P., Wilson, D.A., Cripton, P.A. Intervertebral disc pressure during lateral bending. 54th Annual Meeting of the Orthopaedic Research Society, March 2-5, 2008, San Francisco, California.

Dennison, C., Saari, A., Wild, P., Wilson, D.A., Cripton, P.A. Comparison of intervertebral disc pressure measurements made with fibre-Bragg gratings to those made with a contemporary needle mounted sensor ex vivo. 54th Annual Meeting of the Orthopaedic Research Society, March 2-5, 2008, San Francisco, California

Saari, A., Dennison, C., Wild, P., Wilson, D.A., Cripton, P.A. Intervertebral disc pressure measurements: Influence of disc thickness on disc pressure during lateral bending. *World Forum for Spine Research*, January 23-26, 2008. Kyoto, Japan.

Dennison, C., Saari, A., Wild, P., Wilson, D.A., Cripton, P.A. Ex vivo measurement of porcine intervertebral disc pressure during compression and lateral bending using a novel in-fibre Bragg grating sensor. *World Forum for Spine Research*, January 23-26, 2008. Kyoto, Japan.

Itshayek E., Saari A., Nelson T.S., Heran M, Jhamb A., Cripton P.A. Spinal cord deformation, expected neurologic injury, clinical classification of column injury and residual compression resulting from head-first impact: a high-speed experiment. *Proceedings of the Canadian Spine Society Annual Meeting*, March 21-24, 2007, Mt. Tremblant, PQ, Canada

Saari A., Itshayek E., Nelson T.S., Cripton P.A. Kinematics of the entire cervical spine in the presence of physiologic follower load during head-first impact. *Proceedings of the Canadian Spine Society Annual Meeting*, March 21-24, 2007, Mt. Tremblant, PQ, Canada

Saari A., Itshayek E., Nelson T.S., Cripton P.A. High speed cineradiographic measurement of spinal cord deformation during cervical spine injuries in a cadaver model. *Proceedings of the Canadian Spine Society Annual Meeting*, March 21-24, 2007, Mt. Tremblant, PQ, Canada

Saari A., Itshayek E., Nelson T.S., Morley P.L., Cripton P.A. Spinal cord deformation during injury of the cervical spine in head-first impact. *Proceedings of the International Research Council on the Biomechanics of Impacts - 2006 Annual Meeting*, September 20-22, 2006, Madrid, Spain (4 page conference manuscript).

Saari A., Cripton P.A. Cervical spinal cord deformation during head to ground impact induced injuries. *Proceedings of the 2<sup>nd</sup> Annual Northwest Biomechanics Symposium*, May 12-13, 2006, Vancouver, BC, Canada

Saari A., Cripton P.A. Dynamic response of the cervical spine in the presence of physiologic follower load during head to ground impact. *Proceedings of the 2<sup>nd</sup> Annual Northwest Biomechanics Symposium*, May 12-13, 2006, Vancouver, BC, Canada

Saari A., Morley P., Cripton P.A. Burst fractures of the cervical spine in the presence of physiologic preload: reconstruction of three dimensional kinematics. *Proceedings of the International Collaboration on Repair Discoveries (ICORD) Annual Research Meeting*, October 17, 2005, Vancouver BC, Canada

Saari A., Morley P., Cripton P.A. Spinal cord deformation during burst fractures of the cervical spine in the presence of physiologic preload. *Proceedings of the 2005 Summer Bioengineering Conference of the American Society of Mechanical Engineers*, June 22-26, 2005, Vail CO, USA



Saari A., Morley P., Crompton P.A. Spinal Cord Deformation During Burst Fractures Of The Cervical Spine. *Proceedings of the 2005 Northwest Biomechanics Symposium*, May 13-14, 2005, Seattle WA, USA

Saari A., Reed S.G., Crompton P.A. A Least Squares Approach to Calculating Angular Acceleration and Velocity Using Accelerometry. *Proceedings of the 5<sup>th</sup> Alberta Biomedical Engineering Conference*. October 22-24, Banff AB, Canada.

