

Peter A. Crompton, Ph.D., P.Eng.
Principal Engineer

Dr. Peter A. Crompton is the Chief Executive Officer of Synaptic Analysis Consulting Group and a Principal Engineer. Dr. Crompton addresses issues involving traumatic human injury and medical device design and failure. He has expertise in the areas of human tolerance to injury, especially spine and spinal cord injury and hip injury, and the analysis of dynamic events such as rollovers. His work includes analysis of injuries occurring in sports, transportation and occupational accidents and those involving consumer products. In the medical device area, he has expertise in the efficacy and failure of surgically implantable orthopaedic devices with an emphasis on those used in spine surgery. His technical skills also include materials testing systems, tribological testing machines, strain measurement techniques, custom-load cell development, three dimensional motion measurement and analysis, impact apparatus development and associated high-speed data collection.

Dr. Crompton is an Associate Professor of Mechanical Engineering and an Associate Faculty member in the Department of Orthopaedics at the University of British Columbia (UBC) in Vancouver, Canada. At UBC he co-directs the Orthopaedic and Injury Biomechanics Group and he is a Principal Investigator in the ICORD spinal cord injury research centre and in the Centre for Hip Health and Mobility. Dr. Crompton has previously held positions as a Managing Engineer at Exponent Failure Analysis Associates in Philadelphia, a postdoctoral associate at the Biomechanics Research Laboratory in the Department of Orthopaedics and Rehabilitation at Yale University and as a research fellow at the Maurice E. Müller Institute for Biomechanics at the University of Bern in Switzerland.

Education and Awards

Ph.D., Mechanical Engineering, Queen's University, Canada, 1999
M.S., Mechanical Engineering, Queen's University, Canada, 1993
B.S., Mechanical Engineering, Technical University of Nova Scotia, 1990
B.S., Mathematics, Dalhousie University, Canada, 1987

- Natural Sciences and Engineering Research Council of Canada, Postdoctoral Research Fellowship, 1999
- Cervical Spine Research Society, 2001 Research Grant Award
- Best Presentation award (Margaret Hines Award) at the 2008 Ohio Injury Biomechanics Symposium (PhD student Tim Nelson Presenting)
- Winner of a 2008 Popular Science Best of What's New award in the Personal Health category for co-inventing the Pro-Neck-Tor helmet. 100 new products and technologies that span 11 categories are given this award annually.
- University of British Columbia, Killam Faculty Research Fellowship 2009-2010

- Best Presentation award (Margaret Hines Award) at the 2010 Ohio Injury Biomechanics Symposium (PhD student Claire Jones Presenting)
- **Reviewer:** Journal of Biomechanics, European Spine Journal, Biomed Central, Annals of Biomedical Engineering, Spine, Medical Engineering and Physics, Clinical Biomechanics, Canadian Space Agency, Natural Sciences and Engineering Research Council (Canada), Canadian Institutes of Health Research, National Science Foundation (US), Ohio State University

Memberships

- International Society of Biomechanics (member);
- American Society for Testing Materials (member);
- American Society for Testing Materials subcommittee F4.25: spinal devices (member)
- American Society for Testing Materials subcommittee F4.18. device retrieval analysis (member)
- Orthopaedic Research Society (member)
- Society of Automotive Engineers (member)
- Canadian Association of Technical Accident Investigators and Reconstructionists (Member)

Peer Reviewed Publications

Nelson TS, Cripton PA. A new Biofidelic Sagittal Plane Surrogate Neck for Head-First Impacts. *Traffic Injury Prevention* 2010;11:309-319.

Greaves LL, Van Toen (Née Greaves) C, Melnyk A, Koenig L, Zhu Q, Tredwell S, Mulpuri K, Cripton PA. (2009) Pediatric and adult three-dimensional cervical spine kinematics: effect of age and sex through overall motion. *Spine*;34:1650-7.

Cameron ID, Robinovitch S, Birge S, Kannus P, Khan K, Lauritzen J, Howland J, Evans S, Minns J, Laing A, Cripton P, Derler S, Plant D, Kiel DP. (2009) Hip protectors: recommendations for conducting clinical trials-an international consensus statement (part II). *Osteoporosis International*. DOI 10.1007/s00198-009-1055-2.

Robinovitch SN, Evans SL, Minns J, Laing AC, Kannus P, Cripton PA, Derler S, Birge SJ, Plant D, Cameron ID, Kiel DP, Howland J, Khan K, Lauritzen JB. (2009) Hip protectors: recommendations for biomechanical testing-an international consensus statement (part I). *Osteoporosis International*. DOI 10.1007/s00198-009-1045-4.

Reynolds CC, Harris MA, Teschke K, Cripton PA, Winters M. The impact of transportation infrastructure on bicycling injuries and crashes: a review of the literature. *Environmental Health* 2009;8:47.

deBakker PM, Manske SL, Ebacher V, Oxland T, Cripton PA, Guy P. (2009) During sideways falls proximal femur fractures initiate in the superolateral cortex: evidence from high-speed video of simulated fractures. *Journal of Biomechanics*;42(12):1917-25.



Kroeker SG, Bilston LE, Morley P, Cripton PA. (2009) An improved physical model of the in vivo human spinal cord: Tension and Transverse Compression. *Journal of Biomechanics*;42(7):878-83.

Ramchandani SR, Panjabi MM, Cripton PA, VanderWeele TJ. (2008) Biomechanical evaluation of intervertebral discs following a burst fracture. *Journal of Musculoskeletal Research*;11(3):1-10.

Vorriink S, van der Woude L, Messenberg A, Cripton PA, Hughes B, Sawatzky B. A. (2008) comparison of wheelchair wheels in terms of vibration and spasticity in people with a spinal cord injury. *Journal of Rehabilitation Research and Development*; 45(9):1269-79.

Blair J, Perdios A, Babul S, Young K, Beckles J, Pike I, Cripton PA, Sasges D, Mulpuri K, Desapriya E. (2008) The appropriate and inappropriate use of child restraint seats in Manitoba. *International journal of injury control and safety promotion*; 15:151-6.

Beadon K, Johnston J, Siggers K, Itshayek E, Cripton PA. (2008) Biomechanical simulation of spondylolysis and spondylolisthesis: an in vitro porcine model. *Spine*; 33:2387-93.

Dennison CR, Wild PM, Wilson DR, Cripton PA. (2008) A minimally invasive in-fibre Bragg grating sensor for intervertebral disc pressure measurements. *Measurement Science & Technology*; 19:085201 (12 pp).

Dennison CR, Wild PM, Dvorak MF, Wilson DR, Cripton PA. (2008) Validation of a novel minimally invasive intervertebral disc pressure sensor utilizing in-fiber Bragg gratings in a porcine model: an ex vivo study. *Spine*;33:E589-94.

Jones CF, Kroeker (Née Reed) SG, Cripton PA, Hall RM. (2008) The effect of cerebrospinal fluid on the biomechanics of spinal cord: an ex vivo bovine model using bovine and physical surrogate spinal cord. *Spine*;33:E580-8.

Louman-Gardiner K, Mulpuri K, Perdios A, Tredwell S, Cripton PA. (2008) Pediatric lumbar Chance fractures in British Columbia: chart review and analysis of the use of shoulder restraints in MVAs. *Accident Analysis and Prevention*;40:1424-9.

Zhu, Q., Park, Y., Sjøvold, S.G., Niosi, C.A., Wilson, D.C., Cripton, P.A., Oxland, T.R. (2008) Can extra-articular strains be used to measure facet contact forces in the lumbar spine? An *in vitro* biomechanical study. *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine* 22(2):171-184

Dennison, CR, Wild PM, Byrnes PW, Saari A, Itshayek E, Wilson DC, Zhu QA, Dvorak MF, Cripton PA, Wilson DR (2008), Ex vivo measurement of lumbar intervertebral disc pressure using fibre-Bragg gratings. *Journal of Biomechanics*. 41(1):221-5

Zhu Q., Lane C., Ching R.P., Gordon J.D., Fisher C.G., Dvorak M.F., Cripton P.A., Oxland T.R. (2008) The degree of translational constraint influences dynamic spinal canal occlusion of the thoracic spine: an *in vitro* experimental study. *Journal of Biomechanics*. 41(1):171-9

Greaves, L.L., Zhu, Q., Cripton, P.A., Cluff, M., Greaves, C.Y., Melnyk, A., Perdios, A., Tredwell, S., Mulpuri, K. (2007) The Effect of Age and Gender on the Three-Dimensional Kinematics of the Pediatric Cervical Spine. *Proceedings, SAE Digital Human Modeling Conference, SAE No. 2007-01-2495*.



- Tan J.S., Bailey C.S., Dvorak M.F., Fisher C.G., Cripton P.A., Oxland T.R. (2007) Cement Augmentation of Vertebral Screws Enhances the Interface Strength between Interbody Device and Vertebra Body. *Spine* 32(3):334-41
- Zhu Q., Larson C.R., Sjøvold S.G., Rosler D.M., Keynan O., Wilson D.R., Cripton P.A., Oxland TR (2007) Biomechanical evaluation of the total facet arthroplasty system™: three-dimensional kinematics. *Spine* 32(1):55-62
- Villarraga M.L., Cripton P.A., Teti S., Steffey D.S., Krisnamuthy S., Albert T., Hilibrand A., Vaccaro A. (2007) Wear and Corrosion Evaluation in Retrieved Thoraco-Lumbar Internal Fixation from 57 Patients. *Spine*. 31(21):2454-62
- Ivancic P.C., Panjabi M.M., Ito S., Cripton P.A., Wang J.L. (2005) Biofidelic whole cervical spine model with muscle force replication for whiplash simulation. *European Spine Journal* 14(4): 346-55
- Villarraga M.L., Bellezza A.J., Harrigan T.P., Cripton P.A., Kurtz S.M., Edidin A.A. (2005) The biomechanical effects of kyphoplasty on treated and adjacent non-treated vertebral bodies following kyphoplasty. *Journal of Spinal Disorders and Techniques*. 18(1):84-91
- Cripton P.A., Oxland T.R., Zhu Q.A. (2005) Use of helical axis of motion and facet joint load information in the evaluation of non-fusion spinal implants: concept and preliminary results. *Roundtables in Spine Surgery*; 1:22-30 (*Non refereed publication*)
- Haberl H., Cripton P.A., Orr T.E., Beutler T., Frei H., Lanksch W.R., Nolte L.P. (2004) Kinematic response of lumbar functional spinal units to axial torsion with and without superimposed compression and flexion/extension. *European Spine Journal*.13:560-6
- Villarraga, M.L., Cripton, P.A., Bellezza, A.J., Berlemann, U., Kurtz, S.M., Edidin, A.A. (2004) Bone and Bone Cement Stresses in the Thoraco-Lumbar Spine Following Kyphoplasty: A Finite Element Analysis. *Der Orthopade (Special Issue Concerning Cementing Techniques)* 33(1):48-55 (*In German*)
- Miura T., Panjabi M.M., Cripton P.A. (2002) A Method to Simulate *In vivo* Cervical Spine Kinematics Using *In vitro* Compressive Preload. *Spine*. 27(1):43-48
- Panjabi M.M., Miura T., Cripton P.A., Wang J.-L., Nain A.S., DuBois C. (2001) Development of a system for *in vitro* neck muscle force replication in whole cervical spine experiments. *Spine*. 26(20):2214-2219
- Cripton P.A., Sati M., Orr T.E., Bourquin Y., Dumas G.A., Nolte L.-P. (2001) Animation of *in vitro* biomechanical tests. *Journal of Biomechanics*. 34(8):1091-1096
- Cripton P.A., Dumas G.A., Nolte L.-P. (2001) A novel technique for measuring *in vitro* pressure in intervertebral discs: application to the cervical spine. Technical Note. *Journal of Biomechanics*. 34(4):545-9.
- Cripton P.A., Bruehlmann, S.B., Orr, T.E., Oxland, T.R., Nolte, L.-P. (2000) *In vitro* axial preload application during spine flexibility testing: towards reduced apparatus-related artefacts. *Journal of Biomechanics*. 33(12):1559-1568.
- Cripton P.A., Jain G.M., Wittenberg R.H., and Nolte L.-P. (2000) Load sharing characteristics of instrumented lumbar spine fusions. *Spine*. 25(2):170-9.



Lund T., Oxland T.R., Jost B., Cripton P.A., Grassmann S., Etter C., and Nolte L.-P. (1998) Interbody cage stabilization in the lumbar spine: a biomechanical evaluation of cage design, posterior instrumentation and bone density. *Journal of Bone and Joint Surgery. British Volume.* 80-B:351-9.

Jost B., Cripton P.A., Lund T., Oxland T.R., Lippuner K., Jaeger P., and Nolte L.-P. (1998) Compressive strength of interbody cages in the lumbar spine: the effect of cage shape, posterior instrumentation and bone density. *European Spine Journal.* 7:132-41.

Berlemann U., Cripton P.A., Rincon L., Nolte L.-P., and Schlapfer F. (1996) Pull-out strength of pedicle hooks with fixation screws: influence of screw length and angulation. *European Spine Journal.* 5:71-3.

Oxland T.R., Lund T., Jost B., Cripton P.A., Lippuner K., Jaeger P., and Nolte L.-P. (1996) The relative importance of vertebral bone density and disc degeneration in spinal flexibility and interbody implant performance. An in vitro study. *Spine.* 21:2558-69.

Berlemann U., Cripton P.A., Nolte L.-P., Lippuner K., and Schlapfer F. (1995) New means in spinal pedicle hook fixation. A biomechanical evaluation. *European Spine Journal.* 4:114-22.

Cripton P.A., Berlemann U., Visarius H., Begeman P., and Prasad P. (1995) Response of the lumbar spine due to shear loading. Society of Automotive Engineers SP-1077. Paper#950662

Articles Submitted or In Revision

Accepted and in revision

Sjovold SG, Zhu Q, Bowden A, Larson CR, deBakker PM, Villarraga ML, Ochoa JA, Rosler D, Cripton PA. Loading of the Total Facet Arthroplasty System™ (TFAS™) compared to a Rigid Posterior Instrumentation System. *European Spine Journal*, conditionally accepted and in revision December 2010.

Chapters in Books

Cripton P.A., Jones C.F., Greaves C.Y. (2008) Impact Biomechanics of the Spine, in *Spinal Mechanics for Product Development in the New Millennium*. Ferrara LA, Goel V, Yuan HA (Eds.). *Submitted February 2008*.

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

Villarraga M.L., Cripton P.A. (2004) The Clinical Performance of UHMWPE in the Spine, in *The UHMWPE Handbook: Ultra-high Molecular Weight Polyethylene in Total Joint Replacement*. Kurtz SM, Ed. Elsevier Academic Press, USA



Selected Presentations

Helgason B, Gilchrist S, Chak J, Ferguson SJ, Guy P, Cripton PA, Femoral neck fracture can initiate through failure of the trabecular bone: evidence from combined multi-scale FEA and impact experiment, *European Orthopaedic Research Society*, 1-2 July, 2010, Davos, Switzerland

Chak J, Gilchrist S, Helgason B, Guy P, Cripton PA, Simulating hip fracture at physiologic sideways fall velocities, *European Orthopaedic Research Society*, 1-2 July, 2010, Davos, Switzerland

Lucas E, Liu J, Russell C, Tetzlaff W, Cripton PA, High speed radiography used to measure dynamic spinal cord deformation in an in vivo rodent model, *National Neurotrauma Symposium*, 14-17 June, 2010, Las Vega, NV, USA.

Jones CF, Lee JHT, Kwon BK, Cripton PA, Cerebrospinal fluid pressure wave during spinal cord injury may contribute to primary injury in a porcine model, *National Neurotrauma Symposium*, 14-17 June, 2010, Las Vega, NV, USA.

Newell R, Seigmund G, Blouin JS, Cripton PA, Neck posture and muscle activation: the design of a human volunteer study comparing the effect of upright and inverted postures, *2010 Northwest Biomechanics Symposium*, 21-22 May, 2010, Seattle, WA, USA.

Lucas E, Liu J, Russell C, Tetzlaff W, Cripton PA, In vivo spinal cord deformation during quasi-static compression using x-ray and radio-opaque markers, *2010 Northwest Biomechanics Symposium*, 21-22 May, 2010, Seattle, WA, USA.

Van Toen (Née Greaves) C, Street J, Oxland TR, Cripton PA, Spinal ligament and vertebral body injuries monitored by acoustic emission, *2010 Northwest Biomechanics Symposium*, 21-22 May, 2010, Seattle, WA, USA.

Lucas E, Liu J, Russell C, Tetzlaff W, Cripton PA, High speed radiography used to measure dynamic spinal cord deformation in an in vivo rodent model, *6th Annual Ohio Injury Biomechanics Symposium* 17-18 May, 2010, Columbus, OH, USA.

Jones CF, Lee JHT, Kwon BK, Cripton PA, Cerebrospinal fluid pressures during dynamic contusion-type spinal cord injury in a pig model, *6th Annual Ohio Injury Biomechanics Symposium* 17-18 May, 2010, Columbus, OH, USA.

CF Jones, BK Kwon, PA Cripton. Cerebrospinal fluid pressures measured during spinal cord injury in a novel pig model, *Proceedings of Neuroscience 2009*, October 17-21, 2009, Chicago, USA

CF Jones, BK Kwon, PA Cripton. Cerebrospinal fluid pressures measured during spinal cord injury in a novel pig model, *Proceedings of Neurotrauma 2009: Second Joint Symposium of the International and National Neurotrauma Societies*, September 7-11, 2009, Santa Barbara, USA

Zhu QA, Jones CF, Schwab T, Larson CR, Itshayek I, Lenke LG, Cripton PA, Maverick Total Disc Replacement in the Lower Lumbar Spine Adjacent to a Long Spinal Fusion: An In Vitro Biomechanical Study of Kinematics. *Proceedings of the 43rd Canadian Orthopaedic Research Society Annual Meeting*; July 3-6, 2009, Whistler, Canada.

Jones CF, Itshayek E, Zhu QA, Schwab T, Larson CR, Lenke LG, Cripton PA, Vertebral Body and Facet Joint Loading with Multilevel Maverick Total Disc Replacement Adjacent to a Long



Spinal Fusion. *Proceedings of the 43rd Canadian Orthopaedic Research Society Annual Meeting*; July 3-6, 2009, Whistler, Canada.

Boak J, Gédet P, Dvorak MF, Ferguson S, Cripton PA, Cervical Spinal Motion that Would Otherwise Be Safe, Can Cause Spinal Cord Compression in a Stenotic Spine. *Proceedings of the 43rd Canadian Orthopaedic Research Society Annual Meeting*; July 3-6, 2009, Whistler, Canada.

Gilchrist S, Guy P, Cripton PA, The Effect of Anteversion on Hip Fracture Mechanics. *Proceedings of the 43rd Canadian Orthopaedic Research Society Annual Meeting*; July 3-6, 2009, Whistler, Canada.

Boak J, Gédet P, Dvorak MF, Ferguson S, Cripton PA, Stenosis in the cervical spinal canal causes spinal cord compression during motion that otherwise would not cause spinal cord compression. *Proceedings of the 5th Annual Ohio Injury Biomechanics Symposium*; May 18-19, 2009, Columbus, OH, USA.

Van Toen (Née Greaves) C, Jones CF, Nelson TS, Street J, Cripton PA, Simulation of head-first impact using cervical spine specimens, simulated neck muscles, and a Hybrid III ATD head. *Proceedings of the 5th Annual Ohio Injury Biomechanics Symposium*; May 18-19, 2009, Columbus, OH, USA.

Ming K, Abugharbieh R, Jones CF, Greaves CY, Yung A, Tetzlaff W, Kozlowski P, Cripton PA, Technique for quantitative analysis of cervical myelopathy using magnetic resonance imaging. *Proceedings of the Cervical Spine Research Society Annual Meeting*; December 4-8, 2008, Austin, USA.

Van Toen C, Sran M, Cripton PA, Robinovitch SN, Preventing fall-related vertebral fractures: effect of floor stiffness on lumbosacral spine forces. *Proceedings of the BC Injury Prevention Conference*; November 19-20, 2008

Cripton PA, Van Toen C, Nelson, T, Injury biomechanics research: spinal cord and hip injury prevention. *Proceedings of the BC Injury Prevention Conference*; November 19-20, 2008

Van Toen C, Nelson TS, Jones CF, Street J, Cripton PA, Development of an in vitro model of head-first impact with a hybrid III head, surrogate spinal cord and simulated neck muscles; *Proceedings of the NHTSA 36th International Workshop on Human Subjects for Biomechanical Research*; November 2, 2008, San Antonio, USA

Nelson TS, Cripton PA. Inducing head motion with a novel helmet during head-first impact can mitigate neck injury metrics: an experimental proof-of-concept investigation using mechanical surrogates. *Proceedings of the International Research Council on the Biomechanics of Impacts*; September 17-19, 2008; Bern, Switzerland (4 page manuscript in proceedings).

Boak J, Gédet P, Dvorak MF, Ferguson S, Cripton PA, At what point does cervical spinal canal stenosis endanger the spinal cord?; *Proceedings of the third pre-IRCOBI Workshop on Biomechanical Experiments*; September 16, 2008, Bern, Switzerland (4 page manuscript in proceedings).

Nelson TS, Greaves CY, Jones CF, Street J, Cripton PA, Experimental Impact to the Hybrid III Head and Cadaveric Cervical Spine with an Advanced Muscle Force Replication System; *Proceedings of the third pre-IRCOBI Workshop on Biomechanical Experiments*; September 16, 2008, Bern, Switzerland (4 page manuscript in proceedings).



Jones CF, Kwon BK, Cripton PA. Cerebrospinal fluid pressures associated with spinal cord injury: pilot study in a large animal model. *Proceedings of the 26th Annual National Neurotrauma Symposium*; July 27-30, 2008, Orlando, USA

Ming K, Abugharbieh R, Jones CF, Greaves CY, Yung A, Tetzlaff W, Kozlowski P, Cripton PA. In vivo and non-invasive analysis of spinal cord deformations for rodent research using magnetic resonance imaging. *Proceedings of the 26th Annual National Neurotrauma Symposium*; July 27-30, 2008, Orlando, USA

Jones CF, Itshayek E, Zhu QA, Schwab T, Larson CR, Lenke LG, Cripton PA. Evaluation of tissue loading in response to one- and two-level maverick total disc replacement adjacent to a long spinal fusion. *Proceedings of the 15th International Meeting on Advanced Spine Techniques*; July 8-11, 2008, Hong Kong, China.

Zhu QA, Itshayek E, Jones CF, Schwab T, Larson CR, Lenke LG, Cripton PA. Kinematic evaluation of one- and two-level Maverick total disc replacement adjacent to a long spinal fusion. *Proceedings of the 15th International Meeting on Advanced Spine Techniques*; July 8-11, 2008, Hong Kong, China.

Boak JC, Popovic D, Itshayek E, Koenig L, Dvorak MF, Cripton PA. Age-related degeneration is related to reduced cervical spine range of motion in the elderly. *Proceedings of the 16th European Society of Biomechanics*; July 6-9, 2008, Lucerne, Switzerland.

Boak JC, Popovic D, Itshayek E, Koenig L, Dvorak MF, Cripton PA. X-ray analysis shows degeneration is related to range of motion in the cervical spine of geriatric subjects. *Proceedings of Spineweek 2008*; May 26-31, 2008, Geneva, Switzerland.

Nelson TS, Cripton PA. Dynamically Modifying End Conditions in a Head-First Impact with a Novel Helmet can Mitigate Neck Injury Metrics: An Experimental Proof-of-Concept Investigation Using Mechanical Surrogates. *4th Annual Ohio Injury Biomechanics Symposium*, 19-20 May, 2008, Columbus, OH, USA. (Winner of best presentation award)

Jones CF, Kwon BK, Dennison C, Itshayek E, Marquez J, Singleton D, Wild P, Cripton PA. Development and pilot results from a large animal study to measure cerebrospinal fluid pressure before, during and after spinal cord injury. *4th Annual Ohio Injury Biomechanics Symposium*, 19-20 May, 2008, Columbus, OH, USA.

Nelson TS, Cripton PA. Can a helmet mitigate neck injuries in head-first impacts? *Proceedings of the 4th Annual Northwest Biomechanics Symposium*, May 9-10, 2008, Boise, ID, USA

Chak JD, Oxland TR, Cripton PA. Creep testing using load control with spine motion simulator. *Proceedings of the 4th Annual Northwest Biomechanics Symposium*, May 9-10, 2008, Boise, ID, USA

Ming K, Abugharbieh R, Jones CF, Greaves CY, Yung A, Tetzlaff W, Kozloski P, Cripton PA. Finite element validation of spinal cord deformation analysis based on MR imaging data. *Proceedings of the 4th Annual Northwest Biomechanics Symposium*, May 9-10, 2008, Boise, ID, USA



Greaves CY, Gilchrist S, Morrison T, Cripton PA, Hunter CJ. Impact properties of bovine intervertebral discs. *Proceedings of the 4th Annual Northwest Biomechanics Symposium*, May 9-10, 2008, Boise, ID, USA

Jones CF, Kwon BK, Dennison C, Wild P, Marquez J, Cripton PA. A large animal model to measure cerebrospinal fluid pressures associated with spinal cord injury: development and preliminary results. *Proceedings of the 4th Annual Northwest Biomechanics Symposium*, May 9-10, 2008, Boise, ID, USA

Greaves CY, Saari A, Cripton 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

Ming K, Abugharbieh R, Jones CF, Yung A, Kozlowski P, Tetzlaff W, Cripton PA, Computational MR Image Analysis for Spinal Cord Injury Studies. *Proceedings of the International Society for Magnetic Resonance in Medicine (ISMRM) 16th Scientific Meeting & Exhibition*, May 3-9, 2008, Toronto, Canada

Manske SL, de Bakker PM, Ebacher V, Oxland TR, Cripton PA, Guy P, Failure in femoral neck fractures initiates in the superolateral cortex: evidence from high speed video of simulated fractures. *Proceedings of the 54th Annual Meeting of the Orthopaedic Research Society, March 2-5 2008*, San Francisco, California

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

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

Saari A, Dennison C, Wild P, Wilson DA, Cripton PA, 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 DA, Cripton PA, 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

Beadon K., Siggers K., Johnston J.D., Itshayek E., Cripton P.A. Biomechanical Simulation of Spondylolysis and Spondylolisthesis: An *In Vitro* Porcine Model. *Proceedings of the 34th Annual Meeting of the International Society for the Study of the Lumbar Spine*, June 10-14, 2007, Hong Kong, China

Zhu, Q., Park, Y., Sjøvold, S.G., Niosi, C.A., Wilson, D.C., Cripton, P.A., Oxland, T.R. Can extra-articular strains be used to measure facet contact forces in the lumbar spine? *Proceedings of the 34th Annual Meeting of the International Society for the Study of the Lumbar Spine*, June 10-14, 2007, Hong Kong, China

deBakker P.M., Manske S.L., Oxland T., Cripton P.A., Guy P. Failure in Femoral Neck Fractures Initiates in the Superolateral Cortex: Evidence from High Speed Video of a Simulated



Fracture. *Proceedings of the Canadian Orthopaedic Research Society*, June 1-3, 2007, Halifax, NS,

Beadon K., Johnston J.D., Siggers K., Itshayek E., Cripton P.A. A Repeatable In Vitro Biomechanical Model of Spondylolysis and Spondylolisthesis. *Proceedings of the 3rd Annual Northwest Biomechanics Symposium*, May 18-19, 2007, Eugene, OR, USA

Boak J.C., Popovic D., Koenig L., Dvorak M., Cripton P.A. Cervical spondylosis and range of motion in the geriatric population: methodology and preliminary results. *Proceedings of the 3rd Annual Northwest Biomechanics Symposium*, May 18-19, 2007, Eugene, OR, USA

Nelson T.S., Cripton P.A. Methodology for evaluating a neck injury prevention helmet. *Proceedings of the 3rd Annual Northwest Biomechanics Symposium*, May 18-19, 2007, Eugene, OR, USA

Greaves L.L., Cluff M., Greaves C.Y., Zhu Q., Melnyk A., Perdios A., Tredwell S., Mulpuri K., Cripton P. The Effect of Age and Gender on the Three-Dimensional Kinematics of the Pediatric Cervical Spine. *Proceedings of the 3rd Annual Northwest Biomechanics Symposium*, May 18-19, 2007, Eugene, OR, USA

Ming K., Abugharbieh R., Jones C.F., Yung A., Tetzlaff W., Kozlowski P., and Cripton P.A. *In vivo* MR image based deformation analysis for spinal cord injury studies. *Proceedings of the 3rd Annual Northwest Biomechanics Symposium*, May 18-19, 2007, Eugene, OR, USA

Messenberg A., Vorrink S., Hughes B., Sawatzky B., Cripton P.A. Influence of Wheel Design on Wheelchair Vibration; Correlation as a trigger of muscle spasms. *Proceedings of the 3rd Annual Northwest Biomechanics Symposium*, May 18-19, 2007, Eugene, Oregon, USA

Larson C.R., Zhu Q.A., Itshayek E., Dvorak M.F., Fisher C.G., Cripton P.A. Screw loading of the TSRH SAS spinal system in cadaveric simulated deformity correction. *Proceedings of the Canadian Spine Society Annual Meeting*, March 21-24, 2007, Mt. Tremblant, PQ, Canada

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

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Patents and Intellectual Property Rights

Pressure Sensor for Biological Fluids and Use Thereof, US Provisional Patent Application 60/776,600 Filing Date: February 23, 2006 (I am one of five inventors)

Apparatus for the Prevention of Spinal Cord Injury, US Provisional Patent Application – in process 60/851,293 Filing Date: October 13, 2006 (I am one of two inventors on the patent)

