

Jack P. Callaghan Ph.D., CK, CCPE

E-mail callagh@healthy.uwaterloo.ca

Work (519) 888-4567 ext 37080

Fax (519) 746-6776



PUBLICATIONS

Books, Book Chapters, Reports (Total = 1)

1. **Callaghan, J.P.** Cumulative spine loading. in *The Occupational Ergonomics Handbook* 2nd Ed.: Fundamentals and Assessment Tools for Occupational Ergonomics ed. W.S. Marras & W. Karwowski, CRC Press, Chapter 13, 13-1 to 13-25, 2006.

Peer Reviewed Journal Publications (Total = 107)

2009

1. Parkinson, R.J. and **Callaghan, J.P.** The role of dynamic flexion in spine injury is altered by increasing dynamic load magnitude. *Clinical Biomechanics* 24(2): 148-154, 2009.
2. Dunk, N.M., Kedgley, A.E., Jenkyn, T.R., **Callaghan, J.P.** Sagittal lumbo-sacral intervertebral angles in seated postures using digital radiography - Evidence of a pelvis-driven flexion pattern. *Clinical Biomechanics* 24(2): 164-168, 2009.
3. Drake, J.D.M. and **Callaghan, J.P.** Intervertebral neural foramina deformation due to two types of repetitive combined loading. *Clinical Biomechanics* 24(1) 1-6, 2009.
4. Parkinson, R.J. and **Callaghan, J.P.** The use of Artificial Neural Networks to reduce data collection demands in determining spine loading: A laboratory based analysis. *Computer Methods in Biomechanics and Biomedical Engineering* 12(5): 511-522, 2009.
5. Nelson-Wong, E., Howarth, S.J., Winter, D.A., **Callaghan, J.P.** Application of auto and cross-correlation analyses in human movement and rehabilitation research. *Journal of Orthopaedic & Sports Physical Therapy* 39(4) 287-295, 2009.
6. McClellan, A.J., Albert, W.J., Fischer, S.L., Seaman, F.A., **Callaghan, J.P.** Shoulder loading while performing automotive parts assembly tasks: A field study. *Occupational Ergonomics* 8(): 81-90, 2009.
7. Howarth, S.J., Beach, T.A.C., Pearson, A.J., **Callaghan, J.P.** Using sitting as a component of job rotation strategies: Are lifting/lowering kinetics and kinematics altered following prolonged sitting. *Applied Ergonomics* 40(3): 433-439, 2009.

8. van Wyk, P.M., Weir, P.L., Andrews, D.M., Fiedler, K., **Callaghan, J.P.** Determining the optimal size for posture categories used in video-based posture assessment methods. *Ergonomics* 52(8): 921-930, 2009.
9. Donnelly, C.J., **Callaghan, J.P.**, Durkin, J.L. The effect of an active lumbar system on the seating comfort of officers in police fleet vehicles. *The International Journal of Occupational Safety and Ergonomics* 15(3): 295-307, 2009.
10. Howarth, S.J. and **Callaghan, J.P.** The rule of one second for padding kinematic data prior to digital filtering: Influence of sampling and filter cutoff frequencies. *Journal of Electromyography and Kinesiology* 19(5): 875-881, 2009.
11. Wong, A., Dunk, N.M., **Callaghan, J.P.** A systematic approach to feature tracking of lumbar spine vertebrae from fluoroscopic images using complex-valued wavelets. *Computer Methods in Biomechanics and Biomedical Engineering* 12(5): 607-616, 2009.
12. Robbins, S.M.K., Birmingham, T.B., Jones, G.R., **Callaghan, J.P.**, Maly, M.R. Developing an estimate of daily cumulative loading for the knee: examining test-retest reliability. *Gait & Posture* 30(4): 497-501, 2009.
13. Nelson-Wong, E., Flynn, T., **Callaghan, J.P.** Development of active hip abduction as a screening test for indentifying occupational low back pain. *Journal of Orthopaedic & Sports Physical Therapy* 39(9): 649-657, 2009.

In Press

14. **Callaghan, J.P.**, Gregory, D.E., Durkin, J.L. Do NIRS measures relate to subjective discomfort during sedentary tasks? *International Journal of Industrial Ergonomics* In Press, 2009. - Invited Paper
15. **Callaghan, J.P.**, Coke, S.K., Beach, T.A.C. Gender- and time-varying postural and discomfort responses during prolonged driving. *Occupational Ergonomics* In Press, 2009. - Invited Paper
16. Eger, T.R., Godwin, A.G., Henry, D.J., Grenier, S.G., **Callaghan, J.P.**, Demerchant, A. Why vehicle design matters: Exploring the link between line-of-sight, driving posture and risk factors for injury. *Work* In Press, 2009.
17. Howarth, S.J., Beach, T.A.C., and **Callaghan, J.P.** Dynamic factors and force weighting corrections influence estimates of cumulative vertebral joint compression. *Theoretical Issues in Ergonomics Science* In Press, 2009.
18. Nelson-Wong, E. and **Callaghan, J.P.** Is muscle co-activation a causal factor for low back pain development during standing? A multifactorial approach for early identification of at-risk individuals. *Journal of Electromyography and Kinesiology* In Press, 2009.

19. Howarth, S.J., Pronovost, L.M., Polgar, J.M., Dickerson, C.R., **Callaghan, J.P.** Use of a geared wheelchair wheel to reduce propulsive muscular demand during ramp ascent: Analysis of muscle activation and kinematics. *Clinical Biomechanics* In Press, 2009.
20. Pal, P., Milosavljevic, S., Gregory, D.E., Carman, A.B., **Callaghan, J.P.** The influence of skill and low back pain on trunk postures and low back loads of shearers. *Ergonomics* In Press, 2009.
21. De Carvalho, D.E., Soave, D., Ross, K., **Callaghan, J.P.** Lumbar Spine and Pelvic Posture between Standing and Sitting: A radiological investigation including reliability and repeatability of the lumbar lordosis measure. *Journal of Manipulative and Physiological Therapeutics* In Press, 2009.
22. Gregory, D.E., Laughton, C., Carman, A.B., Milosavljevic, S., **Callaghan, J.P.** Trunk postures and peak and cumulative low back kinetics during upright posture sheep shearing. *Ergonomics* In Press, 2009.
23. Howarth, S.J., Polgar, J.M., Dickerson, C.R., **Callaghan, J.P.** Trunk muscle activation during wheelchair ramp ascent: The influence of a geared wheel on reducing the demands of postural control in manual propulsion. *Archives of Physical Medicine and Rehabilitation* In Press, 2009. ARCHIVES-PMR-D-09-00457R2
24. Seaman, F.A., Albert, W.J., Weldon, N.R.E., Croll, J., **Callaghan, J.P.** Biomechanical shoulder loads and postures in light automotive assembly workers: comparison between shoulder pain/no pain groups. *Work* In Press, 2009.
25. Dunk, N.M. and **Callaghan, J.P.** Lumbar spine movement patterns during prolonged sitting differentiate low back pain developers from matched asymptomatic controls. *Work* In Press, 2009.

Submitted/Accepted

26. Gallagher, K.M., Fischer, S.L., Howarth, S.J., Albert, W.J., and **Callaghan, J.P.** Surrogate representation of a task as a method for data reduction in calculating cumulative spinal loading. *Theoretical Issues in Ergonomics Science* Submitted, 2009.
27. Parkinson, R.J., Bezaire, M., **Callaghan, J.P.** A comparison of low back kinetic estimates obtained through posture matching, rigid link modelling and an EMG-assisted model. *Applied Ergonomics* Submitted, 2008.
28. McKinnon C.D., **Callaghan J.P.**, Dickerson C.R. Field quantification of physical exposures of police officers in vehicle operation. *The International Journal of Occupational Safety and Ergonomics* Submitted, 2009.
29. Gregory, D.E. and **Callaghan, J.P.** An examination of the effect of strain rate on the tensile mechanical properties of the annulus fibrosus. *Journal of Biomechanical Engineering* Accepted in Revision, 2009.

30. Nelson-Wong, E., Howarth, S.J., **Callaghan, J.P.** Acute biomechanical responses to a prolonged standing exposure: Implications for job rotation design. *Ergonomics* Submitted, 2009.
31. Drake, J.D.M. and **Callaghan, J.P.** The effects of physiological axial twist rotation rates on the spine's acute failure limit using a porcine model. *Journal of Biomechanics* Submitted, 2008.
32. Lynn, S.K. and **Callaghan, J.P.** Cross talk in surface electromyography: The effect of relative electrode position on the cross correlation function. *Journal of Applied Biomechanics* Submitted, 2008.
33. Gregory, D.E., Pal, P., Carman, A.B., Milosavljevic, S., **Callaghan, J.P.** An examination of shoulder postures and moments of force among different skill levels in the wool harvesting industry. *The International Journal of Occupational Safety and Ergonomics* Submitted, 2008.
34. Fenwick, C., **Callaghan, J.P.**, Tick, H., Tupling, R., Durkin, J.L., The effect of muscle temperature on fatigue detection in surface EMG signals. *Journal of Electromyography and Kinesiology* Submitted, 2008.
35. Gregory, D.E. and **Callaghan, J.P.** A comparison of uniaxial and biaxial mechanical properties of the annulus fibrosus: A porcine model. *Biomechanics and Modeling in Mechanobiology* Submitted, 2009. #BMMB-09-335
36. Nelson-Wong, E. and **Callaghan, J.P.** The impact of a sloped surface on low back pain during prolonged standing work: a biomechanical analysis. *Applied Ergonomics* Submitted, 2009.
37. Azar, N.R., Godin, C.A., Andrews, D.M., **Callaghan, J.P.** Three-dimensional peak and cumulative L4/L5 spine loads and trunk postures during activities of daily living. *Occupational Ergonomics* Submitted, 2009.
38. De Carvalho, D.E. and **Callaghan, J.P.** Passive stiffness changes in the lumbar spine and effect of gender during prolonged simulated driving. *The Spine Journal* Submitted, 2009.
39. Forde, K.A., Albert, W.J., Harrison, M.F., Neary, J.P., Croll, J., **Callaghan, J.P.** Neck loads and postures experienced by helicopter pilots during simulated day and night flights. *International Journal of Industrial Ergonomics* Submitted, 2009.
40. Howarth, S.J., and **Callaghan, J.P.** Quantitative assessment of the accuracy for three interpolation techniques in kinematic analysis of human movement. *Computer Methods in Biomechanics and Biomedical Engineering* Accepted in Revision, 2009.

41. Weir, P.L., Andrews, D.M., van Wyk, P.M., **Callaghan, J.P.** The influence of training on decision times and errors associated with classifying trunk postures using video-based biomechanical methods. *Ergonomics* Submitted, 2009.
42. Gregory, D.E. and **Callaghan, J.P.** Does vibration influence the initiation of intervertebral disc herniation? An in-vitro analysis to determine a causal relationship. *Spine* Submitted, 2009.
43. Van Driel, R., Teschke, K., **Callaghan, J.P.**, Trask, C., Koehoorn, M., Johnson, P.W. A comparison of methods to measure trunk angle: A motion analysis system versus data-logging inclinometers *Human Factors* Submitted, 2009.
44. Gregory, D.E., Brodland, G.W., **Callaghan, J.P.** Examining the mechanical properties of the intervertebral disc's inter-lamellar matrix and the effect of vibration exposure. *Journal of Biomechanics* Submitted, 2009. #BM-D-09-00877
45. Gallagher, K.M., Howarth, S.J., and **Callaghan, J.P.** Effects of anterior shear loading rate on the structural properties of the porcine cervical spine. *The Journal of Bone and Joint Surgery [American]* Submitted, 2009. #JBJS-D-09-01402
46. Gregory, D.E. and **Callaghan, J.P.** Mechanical properties of the annulus fibrosus and the consequence of vibration: An examination of the intra-lamellar matrix. *Journal of Biomechanics* Submitted, 2009. #BM-D-09-00847
47. Howarth, S.J., Gallagher, K.M., and **Callaghan, J.P.** Postural influence on the neutral zone of the porcine cervical spine under anterior/posterior shear load. *Spine* Submitted, 2009.

2008 (16)

48. Parkinson, R.J. and **Callaghan, J.P.** Quantification of the relationship between load magnitude, rest duration and cumulative compressive tolerance of the spine: Development of a weighting system for adjustment to a common injury exposure level. *Theoretical Issues in Ergonomics Science* 9(3): 255-268, 2008.
49. Nelson-Wong, E, Gregory, D.E., Winter, D.A., **Callaghan, J.P.** Gluteus medius muscle activation patterns as a predictor of low back discomfort. *Clinical Biomechanics* 23(5): 545-553, 2008.
50. Gregory, D.E., Narula, S., Howarth, S.J., Russell, C., **Callaghan, J.P.** The effect of cardiovascular fatigue on trunk muscle activation patterns and spine postures during simulated firefighting tasks. *Ergonomics* 51(7): 1032-1041, 2008.
51. Drake, J.D.M. and **Callaghan, J.P.** Do flexion/extension postures affect the in-vivo passive lumbar spine response to applied axial twist moments? *Clinical Biomechanics* 23(5): 510-519, 2008.

52. Gregory, D.E., Milosavljevic, S., Pal, P., **Callaghan, J.P.** An examination of shoulder kinematics and kinetics when using a commercial trunk harness while sheep shearing. *Applied Ergonomics* 39(1): 29-35, 2008.
53. Beach, T.A.C., McDonald, K.A., Coke, S.K., and **Callaghan, J.P.** Gender response to automobile and office sitting - Influence of hip, hamstring, and low-back flexibility on seated postures. *The Ergonomics Open Journal* 1: 1-9, 2008.
54. Howarth, S.J., Beach, T.A.C., **Callaghan, J.P.** Abdominal muscles dominate contributions to vertebral joint stiffness during the pushup. *Journal of Applied Biomechanics* 24(2): 130-139 2008.
55. Gregory, D.E., Brown, S.H.M. and **Callaghan, J.P.** Trunk muscle responses to suddenly applied loads: Do individuals who develop discomfort during prolonged standing respond differently? *Journal of Electromyography and Kinesiology* 18(3): 495-502 2008.
56. Beach, T.A.C., Howarth, S.J., **Callaghan, J.P.** The contribution of the trunk muscles to lumbar spine joint loading and rotational stiffness during the performance of standard and suspended push-up exercises. *Human Movement Science* 27(3): 457-472, 2008.
57. Cann, A., Connolly, R., Ruuska, R., MacNeil, M., Birmingham, T., Vandervoort, A.A., **Callaghan, J.P.** Inter-rater reliability of a posture matching assessment approach: a pilot study with food service worker. *Ergonomics* 51(4): 556-572, 2008.
58. Pal, P., Gregory, D.E., Milosavljevic, S., Carman, A.B., **Callaghan, J.P.** Wool Harvesting - a review. *The Journal of Occupational Health and Safety - Australia and New Zealand* 24(5): 435-453, 2008.
59. Sutherland, C.A., Albert, W.J., Wrigley, A.T. and **Callaghan, J.P.** A validation of a posture matching approach for the determination of 3D cumulative back loads. *Applied Ergonomics* 39(2): 199-208, 2008.
60. Gregory, D.E. and **Callaghan, J.P.** Prolonged standing as a precursor for the development of low back discomfort: An investigation of possible mechanisms. *Gait and Posture* 28(1): 86-92, 2008.
61. Andrews, D.M., Holmes, A.M., Weir, P.L., Arnold, T.A., **Callaghan, J.P.** Decision time and errors increase when classifying trunk postures near posture bin boundaries. *Theoretical Issues in Ergonomics Science* 9(5): 425-440, 2008.
62. Drake, J.D.M., Dobson, H., and **Callaghan, J.P.** The influence of posture and loading on inter-facet spacing: An investigation using MRI on porcine spinal units. *Spine* 33(20): E728-734, 2008.

63. Eger, T., Stevenson, J., **Callaghan, J.P.**, Grenier, S., and VibRG. Health risks associated with the operation of load-haul-dump mining vehicles: Part 2- evaluation of operator driving postures and associated postural loading. *International Journal of Industrial Ergonomics* 38(9-10): 801-815, 2008.
64. Andrews, D.M., Arnold, T.A., Weir, P.L., Van Wyk, P.M., **Callaghan, J.P.** Errors associated with bin boundaries in observation-based posture assessment methods and their effect on peak and cumulative low back loads. *Occupational Ergonomics* 8(1): 11-25, 2008.

2007 (6)

65. Tampier, C., Drake, J.D.M., **Callaghan, J.P.**, McGill, S.M. Progressive Disc Herniation: An investigation of the mechanism using radiological, histochemical, and microscopic dissection techniques. *Spine* 32(25): 2869-2874, 2007.
66. Parkinson, R.J. and **Callaghan, J.P.** The role of load magnitude as a modifier of the cumulative load tolerance of porcine cervical spinal units: Progress towards a force weighting approach. *Theoretical Issues in Ergonomics Science* 8(3): 171-184, 2007.
67. Weir, P.L., Holmes, A.M., Andrews, D.M. Albert, W.J., Azar, N.R., **Callaghan, J.P.** Determination of the just noticeable difference (JND) in trunk posture perception. *Theoretical Issues in Ergonomics Science* 8(3): 185-200, 2007.
68. Parkinson, R.J. and **Callaghan, J.P.** Can periods of static loading be used to enhance the resistance of the spine to cumulative compression? *Journal of Biomechanics* 40(13): 2944-2952, 2007.
69. Sutherland, C.A., Albert, W.J., Wrigley, A.T. and **Callaghan, J.P.** The effect of recording angle on posture assessment repeatability and cumulative spinal loading. *Ergonomics* 50(6): 877-889, 2007.
70. Fischer, S.L., Albert, W.J., McClellan, A.J., **Callaghan, J.P.** Methodological considerations in the calculation of cumulative exposure: An assessment of joint model and time standardization approaches on error. *Ergonomics* 50(9): 1365-1376, 2007.

2006 (10)

71. Gregory, D.E., Milosavljevic, S., **Callaghan, J.P.** Quantifying low back peak and cumulative load in open and senior sheep shearers in New Zealand: Examining the effects of a trunk harness. *Ergonomics* 49(10): 968-981, 2006.
72. Durkin, J.L., Harvey, A., Hughson, R.L., **Callaghan, J.P.** The effects of lumbar massage on driver performance, low back discomfort, and muscle fatigue during prolonged driving. *Ergonomics* 49(1): 28-44, 2006.
* *Second most downloaded paper from the 2006 volume*

73. Beach, T.A.C., Coke, S.K., **Callaghan, J.P.** Upper body kinematic and low back kinetic responses to precision placement and cognitive distraction challenges during repetitive lifting. *International Journal of Industrial Ergonomics* 36(7): 637-650, 2006.
74. Drake, J. and **Callaghan, J.P.** Elimination of electrocardiogram contamination from electromyogram signals: An evaluation of currently used removal techniques. *Journal of Electromyography and Kinesiology* 16(2): 175-187, 2006.
75. Gregory, D.E., Dunk, N.M., **Callaghan, J.P.** The comparison of muscle activation and lumbar spine posture during prolonged sitting on a stability ball and in an office chair. *Human Factors* 48(1): 142-153, 2006.
76. Waters, T., Yeung, S., Genaidy, A., **Callaghan, J.P.**, Barriera-Viruet, H., Welge, J., Deddens, J. Cumulative Spinal Loading Exposure Methods for Manual Material Handling Tasks: Part 1: Is Cumulative Spinal Loading Associated With Lower Back Disorders?. *Theoretical Issues In Ergonomics Science* 7(2): 113-130, 2006.
77. Waters, T., Yeung, S., Genaidy, A., **Callaghan, J.P.**, Barriera-Viruet, H., Abdallah, S., Kumar, S. Cumulative Spinal Loading Exposure Methods for Manual Material Handling Tasks: Part 2 - Methodological Issues and Applicability for Use in Epidemiological Studies. *Theoretical Issues In Ergonomics Science* 7(2): 131-148, 2006.
78. Albert, W.J., Duncan, C., Currie-Jackson, N., Gaudet, V., **Callaghan, J.P.** Biomechanical assessment of massage therapists. *Occupational Ergonomics* 6(1): 1-11, 2006.
79. Drake, J.D.M., Fischer, S.L., Brown, S.H.M., **Callaghan, J.P.** Do exercise balls provide a training advantage? An evaluation of muscle activation, spine postures and loading for three trunk extensor exercises. *Journal of Manipulative and Physiological Therapeutics* 29(5): 354-362, 2006.
80. Azar, N., Andrews, D.M., **Callaghan, J.P.** Predicting 3D cumulative L4/L5 spine loads and moments incurred during non-occupational tasks using heart rate determined physical activity level. *Occupational Ergonomics* 6(3&4): 173-186 2006. (Note: published in 2007)
- 2005 (9)**
81. Dunk, N.M., Keown, K.J., Andrews, D.M., **Callaghan, J.P.** Predicting cumulative low back loading during repetitive lifting: Influence of task variability on data extrapolation. *Occupational Ergonomics* 5(3): 149-159, 2005. (Note: published in 2006)
82. Durkin, J.L. and **Callaghan, J.P.** Effects of minimum sampling rate and signal reconstruction on surface electromyographic signals. *Journal of Electromyography and Kinesiology* 15(5): 474-481, 2005.

83. Beach, T., Parkinson, R., Stothart, J.P., **Callaghan, J.P.** The effects of prolonged sitting on the passive flexion stiffness of the in vivo lumbar spine. *The Spine Journal* 5(2): 145-154, 2005.
84. Dunk, N.M., Lalonde, J., **Callaghan, J.P.** Implications for the use of postural analysis as a clinical diagnostic tool: Reliability of quantifying upright standing postures. *Journal of Manipulative and Physiological Therapeutics* 28(6): 386-392, 2005.
85. Azar, N., Andrews, D.M., **Callaghan, J.P.** Accuracy of spine cumulative loading using self-reported duration and frequency information during non-occupational tasks. *International Journal of Industrial Ergonomics* 43(8): 459-461, 2005.
86. Parkinson, R.J., Durkin, J.L., **Callaghan J.P.** Estimating the compressive strength of the porcine cervical spine: an examination of the utility of DXA. *Spine* 30(17): E492-E498, 2005.
87. Drake, J., Aultman, C., McGill, S.M., **Callaghan, J.P.** The influence of static axial torque in combined loading on intervertebral joint failure mechanics using a porcine model. *Clinical Biomechanics* 20(10): 1038-1045, 2005.
88. Dunk, N.M., **Callaghan, J.P.** Gender-based differences in postural responses to seated exposures. *Clinical Biomechanics* 20(10): 1101-1110, 2005.
89. **Callaghan, J.P.**, Keown, K., and Andrews, D.M. Influence of dynamic factors on calculating cumulative low back loads. *Occupational Ergonomics* 5(2): 89-97, 2005.
- 2004 (3)**
90. Parkinson, R., Beach, T., **Callaghan, J.P.** The time-varying response of the in vivo lumbar spine to dynamic repetitive flexion. *Clinical Biomechanics* 19(4): 330-336, 2004.
91. Dunk, N.M., Chung, Y., Sullivan, D., **Callaghan, J.P.** The reliability of quantifying upright standing postures as a baseline diagnostic clinical tool. *Journal of Manipulative and Physiological Therapeutics* 27(2): 91-96, 2004.
92. Aultman, C., Drake, J., **Callaghan, J.P.**, McGill, S.M. The effect of static torsion on the compressive strength of the spine: An in-vitro analysis using a porcine spine model. *Spine* 29(15): E304-E309, 2004.
- 2003 (2)**
93. Beach, T., Mooney, S., **Callaghan, J.P.** An electromyographic evaluation of a continuous passive motion device during prolonged seated computer work. *Work* 20(3): 237-244, 2003.
94. Andrews, D.M. and **Callaghan, J.P.** Determining the minimum sampling rate needed to accurately quantify cumulative spine loading from digitized video. *Applied Ergonomics* 34(6): 589-595, 2003.

2002 (2)

95. **Callaghan, J.P.** and Dunk, N.M. Examination of the flexion relaxation phenomenon in the erector spinae muscles during short duration slumped sitting. *Clinical Biomechanics* 17(5): 353-360, 2002.
96. Sullivan, D., Bryden, P., **Callaghan, J.P.** Inter- and intra-observer reliability of calculating cumulative lumbar spine loads. *Ergonomics* 45(11): 788-797, 2002.

2001 (4)

97. **Callaghan, J.P.**, Salewytch, A.J., Andrews, D.M. An evaluation of predictive methods for estimating cumulative spine loading. *Ergonomics*, 44(9): 825-837, 2001.
98. **Callaghan, J.P.** and McGill S.M. Intervertebral disc herniation: studies on a porcine model exposed to highly repetitive flexion/extension motion with compressive force. *Clinical Biomechanics* 16(1): 28-37, 2001.
99. **Callaghan, J.P.** and McGill SM. Low back joint loading and kinematics during standing and unsupported sitting. *Ergonomics* 44(3): 280-294, 2001.
100. Gunning J.L., **Callaghan, J.P.**, McGill S.M. Spinal posture and prior loading history modulate compressive strength and type of failure in the spine: a biomechanical study using a porcine cervical spine model. *Clinical Biomechanics* 16(6): 471-480, 2001.

1999 (3)

101. Yingling, V.R., **Callaghan, J.P.**, and McGill, S.M. The porcine cervical spine as a model of the human lumbar spine: An anatomical, geometrical and functional comparison. *Journal of Spinal Disorders* 12(5): 415-423, 1999.
102. **Callaghan, J.P.**, Patla, A.E., and McGill, S.M. Low back three-dimensional joint forces, kinematics, and kinetics during walking. *Clinical Biomechanics* 14(3): 203-216, 1999.
103. McGill, S.M. and **Callaghan, J.P.** Impact forces following the unexpected removal of chair while sitting. *Accident Analysis & Prevention* 31(1-2): 85-89, 1999.

1998 (1)

104. **Callaghan, J.P.**, Gunning, J.L., and McGill, S.M. Choosing the most appropriate back extensor exercise: Optimizing the relationship between low back load and muscular activity. *Physical Therapy* 78(1): 8-18, 1998.

1997 (1)

105. Yingling, V.R., **Callaghan, J.P.**, and McGill, S.M. Dynamic loading affects the mechanical properties and failure site of porcine spines. *Clinical Biomechanics* 12(5): 301-305, 1997. Also reprinted in: Year book of Sports Medicine, Mosby Year Book, 1999.

1995 (2)

106. **Callaghan, J.P.** and McGill, S.M. Frozen storage increases the ultimate compressive load of porcine vertebrae. *Journal of Orthopaedic Research* 13(5): 809-812, 1995.
107. **Callaghan, J.P.** and McGill, S.M. Muscle activity and low back loads under external shear and compressive loading. *Spine* 9: 992-998, 1995.

Technical Reports (Total = 12)

Industrial Contracts

1. **Callaghan, J.P.** Effectiveness of an automotive lumbar support in maintaining the lumbar lordosis in sitting: A comparison of lumbar support prominence magnitudes on lumbar spine and pelvic postures during simulated prolonged driving. Prepared for Leggett & Platt Automotive Group. 46 Pages. August 2009.
2. **Callaghan, J.P.** An Examination of the “Core Chair” Passive Movement Seat Pan: Pilot Report. Prepared for #2171584 Ontario Inc., 24 Pages. July 2009.
3. **Callaghan, J.P.** An Evaluation of the Impact of the eQuilibrium[®] Almond on the Biomechanical and Comfort Responses During Prolonged Standing Work. Prepared for DeltaBalance Inc. 55 Pages. November 2008.
4. **Callaghan, J.P.** An Evaluation of the Impact of Accommodation Training on the Biomechanical and Comfort Responses of Evolution ChairJ Users during Prolonged Seated Office Work. Prepared for Posture Perfect Solutions Ltd. 22 Pages. July 2008.
5. **Callaghan, J.P.** and Durkin J.L. The Effect of an Active Lumbar System on the Seating Comfort of Officers in Police Fleet Vehicles. Prepared for Leggett & Platt Automotive Group. 32 Pages. November 2006.
6. **Callaghan, J.P.** An Examination of User Positioning on the SquigJ Seat Pan. Prepared for KEILHAUER. 29 Pages. September 2006.
7. **Callaghan, J.P.** The Impact of Thoracic Back Rest Design on Prolonged Seated Office Work. Prepared for KEILHAUER. 25 Pages. July 2006.
8. **Callaghan, J.P.** and Durkin J.L. Occupational demands, Seating Components and Discomfort in the Windsor Police Cruisers. Prepared for Leggett & Platt Automotive Group. 5 Pages. April 2006.
9. **Callaghan, J.P.** Gender Based Influences on Seated Postural Responses. Prepared for KEILHAUER. 22 Pages. November 2004.
10. **Callaghan, J.P.** Lumbar Massage Car Seat Systems and Low Back Physiological Responses. Prepared for Schukra of North America. 17 Pages. April 2004.

Academic Position Papers

11. Parkinson, R.J. and **Callaghan, J.P.** Cumulative Loading: Implications and Background for Low Back Pain Assessments. Prepared for CRE-MSD. 5 Pages. December 2007.
<http://cre-msd.uwaterloo.ca/Attachment/CumulativeLoading.pdf>
12. Gregory, D.E. and **Callaghan, J.P.** The Use of Stability Balls in the Workplace in Place of the Standard Office Chair. Prepared for CRE-MSD. 3 Pages. July 2007.
http://cre-msd.uwaterloo.ca/kn_stability.html

Refereed Conference Proceedings (Total = 139)

1. **Callaghan, J.P.**, Polgar, J.M., Howarth, S.J., Boyd, A. Reducing muscular effort of manual wheelchair propulsion: Evidence to support the benefits of a geared wheel. 26th International Seating Symposium. Vancouver, BC. University of British Columbia: 2010.
2. Gregory, D.E., **Callaghan, J.P.** Does vibration influence the initiation of intervertebral disc herniation? An in-vitro analysis to determine a causal relationship. Annual Meeting of the The International Society for the Study of the Lumbar Spine. Auckland, NZ: 2010. *Submitted*
3. Hassan, J.A., Milosavljevic, S., Carman, A., Howarth, S.J., **Callaghan, J.P.** Effect of knee bending on the compression and shear forces during the standard and modified islamic bowing posture. Annual Meeting of the The International Society for the Study of the Lumbar Spine. Auckland, NZ: 2010. *Submitted*
4. Gregory, D.E., **Callaghan, J.P.** The effect of prolonged vibration exposure on the tensile mechanical properties of single layers of the annulus fibrosus. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
5. Nelson-Wong, E., **Callaghan, J.P.** Is muscle co-activation a predisposing factor for low back pain development during standing? Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
6. Gallagher, K.M., Howarth, S.J., **Callaghan, J.P.** The effects of anterior shear displacement rate on the viscoelastic properties of the porcine cervical spine. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
7. Howarth, S.J., Gallagher, K.M., **Callaghan, J.P.** Changes in posture do not affect the functional range of motion for the porcine cervical spine under shear loading. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
8. Nairn, B.C., Parkinson, R.J., **Callaghan, J.P.**, Drake, J.D.M. Comparing load and posture on industrial based lifting tasks: effects of gender, spinal load magnitude and postural asymmetry. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
9. Howarth, S.J., Polgar, J.M., Dickerson, C.R., **Callaghan, J.P.** Use of a geared wheelchair wheel for facilitating manual ramp ascent: Effects on trunk muscular demand. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
10. Holmes, M.W., Howarth, S.J., **Callaghan, J.P.**, Keir, P.J. Influence of indenter size and wrist posture on transverse carpal ligament stiffness. Thirty Third Annual Meeting of the

American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.

11. Jackson, J.J., Gregory, D.E., Bannerjee, P., **Callaghan, J.P.** The efficacy of stability ball accommodation training on trunk posture, muscle activation levels and discomfort ratings during seated office work. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
12. De Carvalho, D.E., **Callaghan, J.P.** Influence of automobile seat lumbar support prominence on spine and pelvis postures: A radiological investigation. Thirty Third Annual Meeting of the American Society of Biomechanics. State College, Pennsylvania, Penn State University: 2009.
13. Pal, P., Milosavljevic, S., Gregory, D.E., Carman, A.B., **Callaghan, J.P.** The influence of skill and low back pain on trunk postures and low back loads of shearers. New Zealand Manipulative Physiotherapists Association. Rotorua, New Zealand: 2009.
14. Donnelly, C.J., **Callaghan, J.P.**, Durkin, J.L. The influence of body mass and gender on pressure distribution and discomfort during prolonged driving. XXII International Society of Biomechanics Congress. Cape Town, South Africa: 2009.
15. McKinnon C.D., **Callaghan J.P.**, Dickerson C.R. The evaluation of mobile data terminal location during a simulated police patrol task set, 40th Annual Meeting of the Association of Canadian Ergonomists (ACE), Quebec City, QC: 2009.
16. Wong, A., Mishra, A., Yates, J., Fieguth, F., Clausi, D.A., **Callaghan, J.P.**, Janabi-Sharifi, F., Wang, D. Intervertebral disc segmentation and volumetric reconstruction from peripheral quantitative computed tomography imaging. 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Minneapolis: 2009.
17. Rahimi, F., **Callaghan, J.P.**, Janabi-Sharifi, F., Wang, D. EMG-biofeedback and load sharing problem in assistive and rehabilitation orthotic devices. 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Minneapolis: 2009.
18. VanDriel, R., Teschke, K., Koehoorn, M., Johnson, P.W., **Callaghan, J.P.** A comparison of trunk posture measurements: A motion capture system and a new data-logging inclinometer. Proceedings of the Sixth International Conference on Innovations in Exposure Assessment (X2009). Boston, MA. 2009.
19. De Carvalho, D.E., Soave, D., **Callaghan, J.P.** Radiological measures of lumbar spine and pelvis postures in an automobile seat. Proceedings of the 10th Biennial Congress of the World Federation of Chiropractic. Montreal, Quebec. 2009.

20. VanDriel, R., Teschke, K., Koehoorn, M., Johnson, P.W., **Callaghan, J.P.** A comparison of trunk posture measurements: A motion capture system and a new data-logging inclinometer. Proceedings of the 17th Congress of the International Ergonomics Association. Beijing, China. 2009.
21. **Callaghan, J.P.**, Durkin, J.L., Gregory, D.E., Nelson-Wong, E. Can low level EMG be used to predict subjective discomfort scores? Proceedings of the XVIIth Congress of the International Society of Electrophysiology and Kinesiology. Niagara Falls, Ontario: 2008.-Invited talk.
22. Nelson-Wong, E. and **Callaghan, J.P.** Active hip abduction: a proposed screening test for identification of low back pain developers. APTA Combined Sections Meeting in Las Vegas, NV. 2009.
23. Nelson-Wong, E., Howarth, S., Winter, D.A., and **Callaghan, J.P.** Application of auto and cross correlation analyses for the rehabilitation and movement scientist. APTA Combined Sections Meeting in Las Vegas, NV. 2009.
24. Wong, A., Mishra, A., Fieguth, P., Clausi, D., Dunk, N.M., **Callaghan, J.P.** Shape-guided active contour based segmentation and tracking of lumbar vertebrae in video fluoroscopy using complex wavelets. 30th Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Vancouver: 2008.
25. Milosavljevic, S., Carman, A.B., Pal, P., Bergman, F., Gregory, D.E., Loughton, C., Rehn, B., **Callaghan, J.P.** Identifying and managing risk of low back pain in a rural workforce. 9th International Congress of the International Federation of Orthopaedic Manipulative Therapists. Rotterdam, Neatherlands: 2008.
26. Seaman, F., Albert, W., and **Callaghan, J.P.** Job rotation to reduce shoulder loads during light automotive assembly. 39th Annual Conference of the Association of Canadian Ergonomists. Gatineau: 2008.
27. Kershaw, K., Albert, W., and **Callaghan, J.P.** Cumulative neck loading and postures experienced by Canadian forces helicopter pilots during simulated day and night flights. 39th Annual Conference of the Association of Canadian Ergonomists. Gatineau: 2008.
- Winner of the ACE J.M Christensen Award for Masters Level Papers
28. Pronovost, L., Howarth, S., Dickerson, C., Miller-Polgar, J. and **Callaghan, J.P.** Effects of geared wheels on shoulder muscle activity during wheelchair ramp ascent and descent. 39th Annual Conference of the Association of Canadian Ergonomists. Gatineau: 2008.
29. Howarth, S., Beach, T.A.C. and **Callaghan, J.P.** Application of a force weighting method while calculating cumulative low back loading. 39th Annual Conference of the Association of Canadian Ergonomists. Gatineau: 2008.

30. McKinnon, C., Dickerson, C., and **Callaghan, J.P.** Quantifying physical exposures in police cruiser operations. 39th Annual Conference of the Association of Canadian Ergonomists. Gatineau: 2008.
31. Drake, J.D.M. and **Callaghan, J.P.** Intervertebral neural foramina deformation due to two types of repetitive combined loading. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
32. Parkinson, R.J. and **Callaghan, J.P.** The use of artificial neural networks as a data reduction approach in determining cumulative exposures. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
33. Gregory, D.E. and **Callaghan, J.P.** Comparing uniaxial and biaxial strain responses of the porcine annulus fibrosus. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
34. Beach, T.A.C., McDonald, K.A., Coke, S.K., and **Callaghan, J.P.** Gender responses to sitting in automobile and office seats: Influence of hip and hamstring flexibility on seated postures. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
35. Howarth, S.J. and **Callaghan, J.P.** A unifying approach to determine the number of padding points when digitally filtering kinematic data. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
36. Eger, T., Godwin, A., Grenier, S., and **Callaghan, J.P.** Line of sight and driving posture evaluation: what an operator cannot see influences driving posture. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
37. Nelson-Wong, E., Gregory, D.E., Winter, D.A., and **Callaghan, J.P.** Gender differences in postural control strategies during prolonged standing. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
38. Jackson, J.A., O'Brien, N., Dempsey, P., and **Callaghan, J.P.** A comparison of the repeatability of submaximal and maximal methods commonly employed for normalization of the erector spinae muscles in the thoracic and lumbar region. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
39. De Carvalho, D.E. and **Callaghan, J.P.** Gender and passive tissue responses to prolonged sitting in an automobile seat. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.

40. Dunk, N.M. and **Callaghan, J.P.** Lumbar spine movement and pain during prolonged seated work. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
41. Fischer, S., Albert, W., and **Callaghan, J.P.** Modeling time varying moment profiles determined from automotive assembly workers using a first order system response. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
42. Robbins, S., Jones, G., Birmingham, T., **Callaghan, J.P.**, Maly, M. Developing a cumulative loading measure for the knee: Examining test-retest reliability. Proceedings of the 4th North American Congress on Biomechanics. Ann Arbor, Michigan: University of Michigan: 2008.
43. Nelson-Wong, E, Gregory, D.E., Winter, D.A., **Callaghan, J.P.** Muscle co-activation as a predictor for development of low back discomfort during prolonged standing. APTA Combined Sections Meeting in Nashville, TN. 2008.
44. van Wyk, P.M., Weir, P.L., Andrews, D.M, Fiedler, K., and **Callaghan, J.P.** Determining the optimal bin size for a video-based posture assessment method. 2nd International Conference on Applied Ergonomics, Las Vegas, NV. 14-17 July 2008.
45. Seaman, F.A., Albert, W.J., Weldon, N.R.E., Croll, J., **Callaghan, J.P.** Documentation of shoulder loads in automotive assembly. 2nd International Conference on Applied Ergonomics, Las Vegas, NV. 14-17 July 2008.
46. Parkinson, R., **Callaghan, J.P.** Can height loss across a functional spinal unit modified by static rest breaks mitigate cumulative compression induced injury?. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
47. Gregory, D.E., Howarth, S.J., Narula, S., **Callaghan, J.P.** The effect of cardiovascular fatigue on trunk muscle activation and spine postures during fire fighting tasks. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
48. Dunk, N.M., Kedgley, A.E., Jenkyn, T., **Callaghan, J.P.** Sagittal lumbar intervertebral angles in seated postures using fluoroscopy. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
49. Nelson-Wong, E., Gregory, D.E., Winter, D.A., **Callaghan, J.P.** Postural control strategies during prolonged standing: is there a relationship with low back discomfort?. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.

50. Beach, T.A.C., Howarth, S.J., **Callaghan, J.P.** Trunk muscle activation and low-back loading during the performance of standard and suspended push-up exercises. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
51. Howarth, S.J., Beach, T.A.C., **Callaghan, J.P.** Muscular contributions to vertebral joint rotational stiffness during the standard pushup. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
52. De Carvalho, D.E., Dunk, N.M., **Callaghan, J.P.** Gender Differences in Spinal Posture and User Positioning on a Prototype Seat Pan. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
53. Drake, J.D.M., **Callaghan, J.P.** Acute torsional failure: what is the spine's physiological limit?. Thirty First Annual Meeting of the American Society of Biomechanics. Palo Alto, Stanford University: 2007.
54. Milosavljevic, S., Pal, P., Gregory, D.E., Carman, A.B., Bell, M., **Callaghan, J.P.**, The influence of personal factors, skill and productivity in an occupation at risk of LBP. New Zealand Manipulative Physiotherapists Association Scientific Conference: Rotorua, New Zealand: 2007.
55. Davis, K.G., Kotowski, S.E., **Callaghan, J.P.**, Parkinson, R. Use of Acceleration to Identify Endplate Fractures. In the Proceedings of the International Society of Biomechanics, Taipei, Taiwan: International Society of Biomechanics. Promising Young Scientist Award Plenary Session: 2007.
56. Kotowski, S.E., Parkinson, R., Davis, K.G., **Callaghan, J.P.**, Taking an Acceleration Approach to Identifying Vertebral Endplate Failures. In the Proceedings of the Human Factors and Ergonomics Society 51st Annual Meeting. Baltimore: The Human Factors and Ergonomics Society: 2007.
57. Arnold, T.A., Weir, P.L., Andrews, D.M., and **Callaghan, J.P.** Posture Bin Misclassification Errors Can Affect the Calculation of Peak and Cumulative Low Back Loads. 38th Annual Conference of the Association of Canadian Ergonomists. Toronto: 2007.
58. Cann, A.P., Vandervoort, A.A., Salmoni, A., and **Callaghan, J.P.** Cumulative and peak loading of the lumbar spine and shoulder. 38th Annual Conference of the Association of Canadian Ergonomists. Toronto: 2007.
59. Pearson, A.J., Howarth, S.J., Beach, T.A.C., **Callaghan, J.P.** Does Prolonged Sitting Alter Low-back Mechanics During Manual Lifting and Lowering? 38th Annual Conference of the Association of Canadian Ergonomists. Toronto: 2007.

60. Parkinson, R., **Callaghan, J.P.** A functional tissue injury model for cumulative exposure assessments. 38th Annual Conference of the Association of Canadian Ergonomists. Toronto: 2007.
61. De Carvalho, D.E., Dunk, N.M., **Callaghan, J.P.** Gender Differences in Spinal Posture and User Positioning on a Prototype Seat Pan. 38th Annual Conference of the Association of Canadian Ergonomists. Toronto: 2007.
62. Tampier, C., Drake, J.D.M., **Callaghan, J.P.**, McGill, S.M. Modelo animal de mecanismo de produccion de hernias discales autores. IV Jornadas Chileno Argentinas de Ortopedia y Traumatologia. Otono, Chile: 2007
63. Milosavljevic, S., Gregory, D.E. and **Callaghan, J.P.** Quantifying low back cumulative load in shearers. 13th Conference of the New Zealand Ergonomics Society. Christchurch, New Zealand: 2006.
64. Gregory, D.E., Milosavljevic, S. and **Callaghan, J.P.** Examining the effect of a trunk harness on New Zealand Sheep Shearers. New Zealand Society of Physiotherapists. Auckland, New Zealand: 2006.
65. Weir, P.L., Andrews, D.M., van Wyk, P., and **Callaghan, J.P.** The influence of training on decision times and errors associated with classifying trunk postures near bin boundaries. 37th Annual Conference of the Association of Canadian Ergonomists. Banff: 2006.
66. Holmes, A.M., Andrews, D.M., Weir, P.L., Arnold, T.A., and **Callaghan, J.P.** Decision times and errors increase when classifying trunk postures near posture bin boundaries. 37th Annual Conference of the Association of Canadian Ergonomists. Banff: 2006.
67. Hogan, K.H. and **Callaghan, J.P.** An investigation of industrially transferable data collection techniques to quantify cumulative loading in repetitive tasks. 37th Annual Conference of the Association of Canadian Ergonomists. Banff: 2006.
68. Cann, A.P., Connelly, M., MacNeil, M., Ruuska, R., Vandervoort, A.A., and **Callaghan, J.P.** Inter-rater reliability of the 3DMatch cumulative loading assessments of food service workers. 37th Annual Conference of the Association of Canadian Ergonomists. Banff: 2006.
69. Drake, J. and **Callaghan, J.P.** Do flexion/extension postures affect the passive lumbar spine stiffness response to applied axial torque? 5th World Congress of Biomechanics. Munich: 2006.
70. Coke, S.K., Beach, T.A.C., **Callaghan, J.P.** Gender-based differences in seated postures, pressure distributions and perceived discomfort in an automobile seat. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p52, 2006.

71. Gregory, D.E., Sperling, S., **Callaghan, J.P.** Examining the development of low back discomfort during a prolonged period of standing. Validating possible mechanisms. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p103, 2006.
72. Jackson, J.A. and **Callaghan, J.P.** Spinal kinetics, kinematics and trunk muscle activation profiles in cycling: a pilot study. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p137, 2006.
73. Ste-Croix, C., Durkin, J.L., Fenwick, C., Miller-Polgar, J., and **Callaghan, J.P.** Effects of age and gender on driving posture and reach envelopes. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p128, 2006.
74. Drake, J. and **Callaghan, J.P.** Do changes in posture alter inter-facet spacing? An investigation using MRI and porcine spinal units. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p48, 2006.
75. Fenwick, C., **Callaghan, J.P.**, and Durkin, J.L. The effects of temperature on the electromyographic signal and muscle fatigue detection. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p134, 2006.
76. Fischer, S.L., McClellan, A.J., Albert, W.J., **Callaghan, J.P.** Comparison of research techniques to help improve understanding of cumulative loading as a risk factor in the development of low back pain. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p105, 2006.
77. Weldon, N., Fischer, S.L., Albert, W.J., **Callaghan, J.P.** Determining the optimal sampling frequency to accurately quantify cumulative spinal loads among auto workers using a posture sampling approach. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p131, 2006.
78. McClellan, A.J., Albert, W.J., Fischer, S.L., **Callaghan, J.P.** A comparison of cumulative shoulder loads during automotive assembly tasks for those who have pain and those who do not. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p10, 2006.
79. McClellan, A.J., Albert, W.J., Fischer, S.L., **Callaghan, J.P.** Does increased time spent in non-neutral shoulder postures cause shoulder pain? Proceedings of the Fourteenth

- Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p156, 2006.
80. Andrews, D.M., Arnold, T.A., Weir, P.L., **Callaghan, J.P.** Errors associated with bin boundaries in observation-based Posture assessment methods. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p159, 2006.
 81. Gregory, D.E., **Callaghan, J.P.** Examining the development of low back discomfort during a prolonged period of standing. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p73, 2006.
 82. Beach, T.A.C., Coke, S.K., **Callaghan, J.P.** The impact of cognitive distractions and physical task constraints on cumulative lumbar spine loads. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p142, 2006.
 83. Parkinson, R.J., **Callaghan, J.P.** Can an increase in rest period length alter the cumulative load tolerance of the spine?. Proceedings of the Fourteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Waterloo: University of Waterloo: p36, 2006.
 84. Gregory, D.E., Brown, S.H.M., **Callaghan, J.P.** Trunk muscle responses to suddenly applied loads before and after a prolonged period of standing. XVI Congress of the International Society of Electromyography and Kinesiology: 2006.
 85. Parkinson, R.J. and **Callaghan, J.P.** The use of an animal model can improve results in spinal fatigue testing. 24th Annual Meeting of the Canadian Biomaterials Society. Waterloo, Ontario: 2005.
 86. Parkinson, R.J., Brown, S.H.M., Flynn, J., Noble, J., Powell, M.L., **Callaghan, J.P.** Is unconstrained loading of spinal segments more physiologic? 24th Annual Meeting of the Canadian Biomaterials Society. Waterloo, Ontario: 2005.
 87. Gregory, D.E., **Callaghan, J.P.** Using a stability ball instead of a chair: examining the pros and cons. The Canadian Physiotherapy Association - Orthopaedic Division 17th Annual National Symposium. London, Ontario: 2005.
 88. Dunk, N.M. and **Callaghan, J.P.** Gender-based postural responses to seated exposures. XX International Society of Biomechanics Congress. Cleveland, Ohio: 2005.
 89. Drake, J. and **Callaghan, J.P.** Elimination of ECG contamination from EMG signals: An evaluation of currently used removal techniques. XX International Society of Biomechanics Congress. Cleveland, Ohio: 2005.

90. Parkinson, R.J. and **Callaghan, J.P.** Does load magnitude alter cumulative load tolerance? “Weighting” for an answer. XX International Society of Biomechanics Congress. Cleveland, Ohio: 2005.
91. Drake, J., Fischer, S.L., Brown, S.H.M., and **Callaghan, J.P.** Do exercise balls provide a training advantage for trunk extensor exercises? XX International Society of Biomechanics Congress. Cleveland, Ohio: 2005.
92. Sutherland, C.A., Albert, W.J., **Callaghan, J.P.** and Wrigley, A.T. The accuracy of using postural assessment to determine cumulative exposure. XX International Society of Biomechanics Congress. Cleveland, Ohio: 2005.
93. **Callaghan, J.P.** Accuracy of ergonomics assessment approaches and injury prevention. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004. -Invited talk.
94. Weir, P.L., Andrews, D.M., Albert, W.J., Azar, N. and **Callaghan, J.P.** Determination of the just noticeable difference (jnd) in trunk posture perception. 35th Annual Conference of the Association of Canadian Ergonomists. Windsor: 2004.
95. Sutherland, C.A., Wrigley, A.T., Albert, W.J. and **Callaghan, J.P.** The repeatability of posture matching from various perspectives and the subsequent affect on derived cumulative variables. 35th Annual Conference of the Association of Canadian Ergonomists. Windsor: 2004.
96. Azar, N., Andrews, D.M., **Callaghan, J.P.** Predicting cumulative l4/l5 spine loads and moments incurred during non-occupational tasks using heart rate determined physical activity. 35th Annual Conference of the Association of Canadian Ergonomists. Windsor: 2004.
97. Godin, C.A., Andrews, D.M., Arnold, T.A., **Callaghan, J.P.** 3-dimensional peak and cumulative shoulder loads during non-occupational tasks. 35th Annual Conference of the Association of Canadian Ergonomists. Windsor: 2004.
98. Gregory, D.E. Milosavljevic, S., **Callaghan, J.P.** A preliminary quantification of low back cumulative load in elite and senior sheep shearers in New Zealand. 35th Annual Conference of the Association of Canadian Ergonomists. Windsor: 2004.
99. Hogan, K.L., **Callaghan, J.P.** An investigation of simplified/industrial transferable methods to quantify cumulative loading in repetitive tasks. 35th Annual Conference of the Association of Canadian Ergonomists. Windsor: 2004.
100. Dunk, N.M., Brown, S.H.M., and **Callaghan, J.P.** Distribution of tissue loads supporting the low back during the flexion relaxation phenomenon in sitting and standing postures. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.

101. Parkinson, R.J., Durkin, J.L., **Callaghan, J.P.** Predicting the failure strength of porcine cervical spinal units using bone mineral content and endplate area. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.
102. Durkin, J. and **Callaghan, J.P.** Effects of minimum sampling rate and signal reconstruction on surface electromyographic signals. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.
103. Gregory, D.E. Dunk, N.M. **Callaghan, J.P.** The Comparison of muscle activation and lumbar spine posture during prolonged sitting on a stability ball and in an office chair. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.
104. Drake, J., Aultman, C., McGill, S.M., **Callaghan, J.P.** The role of torsion in intervertebral joint failure mechanic. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.
105. Beach, T., Parkinson, R., Stothart, J.P., **Callaghan, J.P.** Passive lumbar flexion stiffness is altered with exposure to prolonged sitting. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.
106. Godin, C.A., Andrews, D.M., and **Callaghan, J.P.** 3D trunk postures and cumulative low back loads during non-occupational tasks. Proceedings of the Thirteenth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Halifax: Dalhousie University: 2004.
107. Parkinson, R., Beach, T., **Callaghan, J.P.** Investigation of the lumbar spine passive tissue response to repetitive lifting. Twenty Seventh Annual Meeting of the American Society of Biomechanics. Toledo: 2003.
108. Jackson, J., Reed, B., Andrews, D.M., Albert, W.J. and **Callaghan, J.P.** Usability of *3DMatch* - An evaluation of the inter- and intra-observer reliability of posture matching to calculate cumulative low back loading. 34th Annual Conference of the Association of Canadian Ergonomists. London: 2003.
109. **Callaghan, J.P.**, Jackson, J., Andrews, D.M., Albert, W.J. and Potvin, J.R. The design and preliminary validation of '3D-Match' **B** A posture matching tool for estimating three dimensional cumulative loading on the low back. 34th Annual Conference of the Association of Canadian Ergonomists. London: 2003.

110. Beach, T., Mooney, S., **Callaghan, J.P.** Extensor muscle response to continuous passive motion device during prolonged sitting. 34th Annual Conference of the Human Factors Association of Canada. London: 2003.
111. Azar, N., Andrews, D.M., and **Callaghan, J.P.** Accuracy of cumulative low back loads estimated from self-reported duration and frequency information during non-occupational activities. 34th Annual Conference of the Association of Canadian Ergonomists. London: 2003.
112. Agnew, M., Andrews, D.M., Potvin, J.R., and **Callaghan, J.P.** Dynamic 2-d measurements of cumulative spine loading using an electromagnetic tracking device. 34th Annual Conference of the Association of Canadian Ergonomists. London: 2003.
113. Godin, C.A., Andrews, D.M., and **Callaghan, J.P.** Cumulative low back loads of non-occupational tasks using "3D Match", a 3-dimensional video-based posture sampling approach. 34th Annual Conference of the Association of Canadian Ergonomists. London: 2003.
114. Dunk, N.M. and **Callaghan, J.P.** The reliability of quantifying upright standing postures as a baseline diagnostic clinical tool XIX International Society of Biomechanics Congress. Dunedin, New Zealand: 2003.
115. **Callaghan, J.P.** Cumulative loading as an injury mechanism: Tissue considerations. IV World Congress of Biomechanics. Calgary: 2002. -Invited talk.
116. Dunk, N.M. and **Callaghan, J.P.** Erector spinae flexion relaxation during short duration slumped sitting. IV World Congress of Biomechanics. Calgary: 2002.
117. Keown, K.J., Andrews, D.M. and **Callaghan, J.P.** Predicting cumulative low back loading during repetitive lifting: determining the number of trials needed to represent workday conditions. XVI International Annual Occupational Ergonomics and Safety Conference. Toronto: 2002.
118. Sullivan, D., Bryden, P. and **Callaghan, J.P.** Reliability of Manual Digitization for the Calculation of Cumulative Loads in the Lumbar Spine. XVI International Annual Occupational Ergonomics and Safety Conference. Toronto: 2002.
119. Agnew, M.J., Andrews, D.M., **Callaghan, J.P.**, and Potvin, J.R. Evaluation of a magnetic tracking device for estimating cumulative low back compression. IV World Congress of Biomechanics. Calgary: 2002.
120. Agnew, M.J., D.M. Andrews, D.M. and **Callaghan, J.P.** Measuring cumulative compression forces on the low back: the use of a regression-based model and a magnetic tracking device. XVI International Annual Occupational Ergonomics and Safety Conference. Toronto: 2002.

121. Andrews, D.M. and **Callaghan, J.P.** Determining the minimum sampling rate needed to accurately quantify cumulative spine loading from digitized video. XVI International Annual Occupational Ergonomics and Safety Conference. Toronto: 2002.
122. Lauder, C.L, Andrews, D.M. and **Callaghan, J.P.** Peak and cumulative loading of the lumbar spine during simulated non-work activities. XVI International Annual Occupational Ergonomics and Safety Conference. Toronto: 2002.
123. Keown, K., Andrews, D.M., and **Callaghan, J.P.** Influence of dynamic factors on errors in calculating cumulative low back loads during lifting. Twenty Fifth Annual Meeting of the American Society of Biomechanics. UCSD, San Diego: 235-236, 2001.
124. **Callaghan, J.P.**, Salewytch, A.J., and Andrews, D.M. An evaluation of predictive methods for estimating cumulative spine loading. Proceedings of the Eleventh Biennial Conference and Symposia of the Canadian Society for Biomechanics. Montreal: University of Montreal: 189, 2000.
Also published in Archives of Physiology and Biochemistry 108 (1-2): 189-189, 2000.
125. Kerr, D. and **Callaghan, J.P.** Establishing a Relationship Between Spectral Indicators of Fatigue and Ratings of Perceived Discomfort. Proceedings of the 31st Annual Conference of the Human Factors Association of Canada. Hull: 301-307, 1999.
126. Salewytch, A.J. and **Callaghan, J.P.** Discomfort during prolonged sitting: Quantification of lumbar spine postures and trunk extensor activation levels. Proceedings of the 31st Annual Conference of the Human Factors Association of Canada. Hull: 316-321, 1999.
127. **Callaghan, J.P.** and McGill S.M. Studies on intervertebral disc damage from highly repetitive flexion/extension motions with compressive force. XVIIth Congress of the International Society of Biomechanics. Calgary: University of Calgary: 652, 1999.
128. **Callaghan, J.P.** and McGill S.M. Time varying postures, muscular activity, and low back joint loading during unsupported sitting. Proceedings of the 3rd North American Congress on Biomechanics. Waterloo: University of Waterloo: 351-352, 1998.
129. McGowan, B., **Callaghan, J.P.**, and McGill, S.M. The effects of cadence on lumbar spine kinematics during gait. Proceedings of the 3rd North American Congress on Biomechanics. Waterloo: University of Waterloo: 379-380, 1998.
130. Gunning, J.L., **Callaghan, J.P.**, and McGill S.M. Spine load and muscular activity during several back extensor exercises. Proceedings of the 3rd North American Congress on Biomechanics. Waterloo: University of Waterloo: 375-376, 1998.
131. **Callaghan, J.P.** and McGill, S.M. Sitting, standing, and walking workplace considerations: potential for injury from low loading situations. Proceedings of the 30th

- Annual Conference of the Human Factors Association of Canada. Mississauga: 163-168, 1998.
132. **Callaghan, J.P.** and McGill, S.M. Impact forces from falling: Implications for low back injury. Proceedings of the 30th Annual Conference of the Human Factors Association of Canada. Mississauga: 477-482, 1998.
 133. **Callaghan, J.P.**, Patla, A.E., and McGill, S.M. 3D analysis of spine loading during gait. Twentieth Annual Meeting of the American Society of Biomechanics. Atlanta: Georgia Institute of Technology: 13-14, 1996.
 134. **Callaghan, J.P.**, Patla, A.E., and McGill, S.M. An examination of rigid link segment models for gait analysis. Proceedings of the Ninth Biennial Conference and Symposia of the Canadian Society for Biomechanics. Vancouver: Simon Fraser University: 216-217, 1996.
 135. Kinney, S.E., **Callaghan, J.P.**, and McGill, S.M. Lumbar spine movement and muscle activity using the golfer's lifting technique. 28th Annual Conference of the Human Factors Association of Canada: Evidence-Based Ergonomics. Waterloo: University of Waterloo: 73-78, 1996.
 136. McGill, S.M., Axler, C., **Callaghan, J.P.**, Gunning, J., Juker, D., and Kropf, P. Spine loading during rehabilitation exercises: Identifying the safest method. International Society for the Study of the Lumbar Spine. Burlington, Vermont: 72-73, 1996.
 137. **Callaghan, J.P.** and McGill, S.M. Muscle activity and low back loads under external shear and compressive loading. Nineteenth Annual Meeting of the American Society of Biomechanics. Stanford: Stanford University: 117-118, 1995.
 138. Yingling, V.R., **Callaghan, J.P.**, and McGill, S.M. The effect of load rate on the mechanical properties of porcine spinal motion segments. Nineteenth Annual Meeting of the American Society of Biomechanics. Stanford: Stanford University: 119-120, 1995.
 139. **Callaghan, J.P.** and McGill, S.M. Compressive tolerance of a porcine vertebral fracture model exposed to physiologic pressures. Proceedings of the Eighth Biennial Conference and Symposium of the Canadian Society for Biomechanics. Calgary: University of Calgary: 76-77, 1994.

Non-Refereed Conference Proceedings (Total = 45)

1. Eger, T.R., Godwin, A.G., Henry, D.J., Grenier, S.G., **Callaghan, J.P.**, Demerchant, A. Why Vehicle Design Matters: Exploring the Link Between Line-of-Sight, Driving Posture and Risk Factors for Injury. Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.

2. De Carvalho, D.E., Soave, D., **Callaghan, J.P.** Radiological Measures of Lumbar Spine and Pelvis Postures in An Automobile Seat. Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.
3. Gallagher, K., Howarth, S., **Callaghan, J.P.** Effects of Displacement Rate on Acute Anterior Shear Failure of the Porcine Cervical Spine. Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.
4. Gregory, D.E. and **Callaghan, J.P.** Examining the Effect of Prolonged Vibration Exposure on the Tensile Mechanical Properties of Single Layers of the Annulus Fibrosus. Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.
5. Nelson-Wong, E. and **Callaghan, J.P.** is Muscle Co-activation A Causal Factor for Low Back Pain Development During Standing? Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.
6. Howarth, S., Polgar, J.M., Dickerson, C.R., **Callaghan, J.P.** Trunk Muscle Activity During Wheelchair Ramp Ascent and the Effects of A Geared Wheel. Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.
7. Nairn, B.C., Parkinson, R.J., **Callaghan, J.P.**, Drake, J.D.M. Comparing Load and Posture on Lifting Tasks: Effects of Gender, Spinal Load Magnitude and Postural Asymmetry. Proceedings of the Sixth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2009.
8. Howarth, S.J. and **Callaghan, J.P.** The Minimum Number of Padding Points: Effects of Sampling and Cutoff Frequency When Digitally Filtering Kinematic Data. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
9. Beach, T.A.C., McDonald, K.A., Coke, S.K., and **Callaghan, J.P.** Gender Responses to Sitting in Automobile and Office Seats **B** Influence of Hip and Hamstring Flexibility on Seated Postures. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
10. Dunk, N.M. and **Callaghan, J.P.** Lumbar Spine Movement and Pain During Prolonged Seated Work. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
11. Pronovost, L., Howarth, S., Dickerson, C., Polgar, J.M., and **Callaghan, J.P.** Effects of Geared Wheels on Shoulder Muscle Activity During Wheelchair Ramp Ascent and Descent. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.

12. DeCarvalho, D.E. and **Callaghan, J.P.** Gender Differences and Passive Tissue Response to Prolonged Sitting in An Automobile Seat. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
13. Gregory, D.E., Howarth, S., Narula, S., and **Callaghan, J.P.** The Effect of Fatigue on Trunk Muscle Activation and Spine Postures During Firefighting Tasks. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
14. Jackson, J.A., O'Brien, N., Dempsey, P., and **Callaghan, J.P.** Methodological Variance Associated with Normalization of Erector Spinae EMG Using Sub-maximal & Maximal Contraction. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
15. Robbins, S., Jones, G., Birmingham, T., **Callaghan, J.P.**, Maly, M. Developing A Cumulative Loading Measure for the Knee: Examining Test-retest Reliability. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
16. McKinnon, C., Dickerson, C., **Callaghan, J.P.**, Durkin, J. Quantifying physical exposures in police cruiser operations. Proceedings of the Fifth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2008.
17. De Carvalho, D.E., Dunk, N.M., and **Callaghan, J.P.** Gender Differences in Spinal Posture and User Positioning on a Prototype Seat Pan. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
18. Parkinson, R.J., and **Callaghan, J.P.** Is Load Redistribution Due to Static Loading A Viable Mechanism to Enhance Tolerance to Cumulative Compression in the Spine? Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
19. Drake, J.D.M., and **Callaghan, J.P.** Time Varying Measure of Intervertebral Foramina Deformation During Formation of An Intervertebral Disc Injury. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
20. Nelson-Wong, E., Gregory, D., Winter, D.A., and **Callaghan, J.P.** Postural Control Strategies During Prolonged Standing: is There A Relationship with Low Back Discomfort? Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
21. Gregory, D., Brown, S.H.M., and **Callaghan, J.P.** Trunk Muscle Responses to Suddenly Applied Loads Before and After A Prolonged Period of Standing. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
22. Beach, T.A.C., Howarth, S.J., and **Callaghan, J.P.** Trunk Muscle Activation and Low-back Loading During the Performance of Standard and Suspended Push-up

- Exercises. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
23. Dunk, N.M., Kedgley, A.E., Jenkyn, T., and **Callaghan, J.P.** Sagittal Lumbar Intervertebral Angles in Seated Postures Using Fluoroscopy. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
 24. Donnelly C.J., Durkin J., and **Callaghan, J.P.** The Effect of an ALS on the Seating Comfort of Officers in Police Fleet Vehicles. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
 25. Singer, J.C., Dunk, N.M., **Callaghan, J.P.** Evaluation of Surface Marker Systems to Determine Pelvic and Lumbar Kinematics During Sitting. Proceedings of the Fourth Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2007.
 26. Dunk, N.M., and **Callaghan, J.P.** Gender-based differences in postural responses to seated exposures. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
 27. Drake, J.D.M., and **Callaghan, J.P.** In-vivo passive spine stiffness in response to applied axial torque. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
 28. Parkinson, R.J., and **Callaghan, J.P.** The effects of rest duration and load magnitude on cumulative load tolerance. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
 29. Hogan, K., and **Callaghan, J.P.** An investigation of industrially transferable data collection techniques to quantify cumulative loading in repetitive tasks. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
 30. Gregory, D., and **Callaghan, J.P.** Examining the development of low back discomfort during a prolonged period of standing. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
 31. Beach, T.A.C., Coke, S.K., and **Callaghan, J.P.** Upper limb adaptations to precision placement constraints in lifting lead to increased cumulative lumbar spine loads. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
 32. Coke, S.K., Beach, T.A.C., and **Callaghan, J.P.** Gender-based differences in seated postures, pressure distributions and perceived discomfort in an automobile seat. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.

33. McDonald, K.A., Coke, S.K., Beach, T.A.C., and **Callaghan, J.P.** Gender-based differences and influences of flexibility on pelvic orientation during short duration sitting: A proposal. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
34. Mogk, J.P.M. **Callaghan, J.P.**, and Keir, P.J. Elastic properties of the transverse carpal ligament: A cadaveric study with application to modelling. Proceedings of the Third Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2006.
35. Parkinson, R.J., and **Callaghan, J.P.** Does load magnitude modify cumulative load tolerance? Proceedings of the Second Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2005.
36. Gregory, D., Milosavljevic, S., and **Callaghan, J.P.** Examining the effect of trunk harness use on peak and cumulative spinal loads on New Zealand sheep shearers. Proceedings of the Second Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2005.
37. Drake, J.D.M., and **Callaghan, J.P.** Elimination of ECG contamination from EMG signals: An evaluation of currently used removal techniques. Proceedings of the Second Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2005.
38. Durkin, J.L., and **Callaghan, J.P.** Effects of minimum sampling rate and signal reconstruction on surface electromyographic signals. Proceedings of the First Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2004.
39. Gregory, D., Dunk, N.M., and **Callaghan, J.P.** The comparison of muscle activation and lumbar spine posture during prolonged sitting on a stability ball and in an office chair. Proceedings of the First Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2004.
40. Drake, J.D.M., Aultman, C., McGill, S.M., and **Callaghan, J.P.** The role of torsion in intervertebral joint failure mechanics. Proceedings of the First Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2004.
41. Dunk, N.M., and **Callaghan, J.P.** The reliability of upright standing spine postures as a clinical diagnostic tool. Proceedings of the First Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2004.
42. Beach, T.A.C., Parkinson, R.J., Stothart, J.P., and **Callaghan, J.P.** Prolonged sitting alters passive low back flexion stiffness. Proceedings of the First Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2004.
43. Godin, C.A., Andrews, D.M., Potvin, J.R., and **Callaghan, J.P.** Predicting low back disorders from exposure to cumulative loading within the automotive industry.

Proceedings of the First Annual Ontario Biomechanics Conference (OBC), Barrie, Ontario, 2004.

44. Sutherland C.A., Albert W.J., **Callaghan, J.P.**, Wrigley A. Can you see the difference? The effect of video camera placement. 2nd Annual Atlantic Provinces Exercise Scientists Conference, Wolfville, Nova Scotia, March 12-13, 2004.
45. Sutherland C.A., Albert W.J., **Callaghan, J.P.**, Wrigley A. The effects of camera placement on postural assessment and cumulative back loading calculations. 6th Annual Association of Canadian Ergonomists - Atlantic Conference, St. John's, NFLD, February, 2004.