

## Mark L. McMulkin, PhD

Director, Walter E. and Agnes M. Griffin Motion Analysis Center  
Shriners Hospitals for Children – Spokane, 911 W. 5th Avenue, Spokane, WA 99204  
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### Education

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#### **Doctor of Philosophy, (April 1996)**

Industrial and Systems Engineering, Human Factors Engineering option  
Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA  
Dissertation: *Investigation and Empirical Evaluation of Inputs to Optimization-based Biomechanical Trunk Models*  
Major Advisor: Dr. Jeffrey Woldstad

#### **Master of Science, (January 1992)**

Industrial and Systems Engineering, Human Factors Engineering option  
Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA  
Thesis: *Observation, Description, and Prediction of Long-Term Learning on a Keyboarding Task*  
Major Advisor: Dr. Karl Kroemer

#### **Bachelor of Science, (May 1989)**

Mechanical Engineering, *magna cum laude*, University of Idaho, Moscow, Idaho

### Professional Experience

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**Director/Biomechanical Engineer. (8/98 – present).** Walter E. and Agnes M. Griffin Motion Analysis Center, Shriners Hospitals for Children, Spokane, WA.

Responsibilities:

- Develop the Motion Analysis Center as a state-of-the-art clinical and research facility; manage the functions of the center, including supervising its employees, participating in clinical motion center services, and designing and directing clinical data collection.
- Provide education to medical staff, residents, motion center, and hospital staff in the purpose and interpretation of motion analysis.
- Establish affiliations with local universities and other Shrine Hospitals to extend motion center education in the community and to collaborate in research.
- Organized nationwide professional development conference of Shrine Gait researchers and professionals to advance clinical data collection, analysis, and interpretation
- Director of Research

**Adjunct Assistant Professor (1/07 – present).** Department of Nutrition and Exercise Physiology, Washington State University Spokane, Spokane, WA.

- Course: Biomechanical Analysis, NEP 362.

**Adjunct Assistant Professor. (1/99 – 5/06).** Mechanical Engineering Department and Psychology Department, University of Idaho, Moscow, ID.

- Courses: Biomechanics, Introduction to Human Factors Engineering.

## **Professional Experience (continued)**

**Assistant Professor. (8/96 - 7/98).** Industrial and Manufacturing Engineering Department, Wichita State University, Wichita, KS.

Prepared and presented material for five courses per year in areas of biomechanics, ergonomics, safety, and industrial engineering. Advised graduate students as chair and committee member. Authored/Co-Authored professional manuscripts, journal articles, and grant proposals. Planned, coordinated, and participated in both university and community events, such as center tours, open houses, and demonstrations. Guided research projects in biomechanics, rehabilitation engineering, and ergonomics.

Research Projects: *Biomechanics of Team Lifting* - Compared the forces acting at the hands during team and individual lifts and the maximal acceptable weight of lift during each lift. *Reach Envelopes for Persons with Cerebral Palsy* - Utilized a motion analysis system to measure the maximum reach envelope for persons with cerebral palsy.

**Instructor. (5/96 - 6/96).** Industrial and Systems Engineering Department, Virginia Polytechnic Institute and State University, Blacksburg, VA. Taught Methods Engineering and Work Measurement Course.

**Graduate Research Assistant. (8/89 - 12/93).** Industrial and Systems Engineering Department, Virginia Polytechnic Institute and State University, Blacksburg, Virginia. Completed Ternary Chord Keyboard Project and Railroad Hand Brake Project.

Research Projects: *Railroad Hand Brake Project*: (13 individual studies), *Usability Testing of a Ternary Chord Keyboard* (5 individual studies)

**Graduate Teaching Assistant. (1/94 - 12/95, 5/91 - 7/91).** Industrial and Systems Engineering Department, Virginia Polytechnic Institute and State University, Blacksburg, VA. Taught Introduction to Industrial Engineering Course; Teaching Assistant for Research Design I, Research Design II, and Introduction to Industrial Engineering.

**Industrial Engineer. (5/90 - 10/90).** Quality Assurance Laboratory, Corning Incorporated, Blacksburg, Virginia.

**Process and Mechanical Engineer. (5/88 - 12/88).** Mechanical Design Department, Chevron Corporation, San Ramon, California

**Energy Auditor. (6/87 - 8/87).** Idaho Department of Water Resources, Boise, Idaho.

## Journal Publications

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1. Peck JB, Baird GO, Caskey PM, Elizondo T, McMulkin ML, and Tompkins B (In Press). Inter-observer reliability of the Gross Motor Function Classification System between parents and orthopedic specialists for patients with cerebral palsy. *Current Orthopaedic Practice*.
2. McMulkin ML, Gordon AB, Genung S, Huck M, Caskey PM, and Baird GO (2017). Prevalence of associated diagnoses in children who present with toe walking. *Physical Medicine and Rehabilitation Research*, 2(1), 1-3.
3. MacWilliams BA, McMulkin ML, Davis RB, Westberry DE, Baird GO, and Stevens PM (2016). Biomechanical changes associated with femoral derotational osteotomy. *Gait and Posture*, 49, 202-206. doi: 10.1016/j.gaitpost.2016.07.002. PMID: 27450671
4. McMulkin ML, Gordon AB, Caskey PM, Tompkins BJ, and Baird GO (2016). Outcomes of orthopedic surgery with and without an external femoral derotational osteotomy in children with cerebral palsy. *Journal of Pediatric Orthopedics*, 36(4), 382-386. doi: 10.1097/BPO.0000000000000465. PMID: 25851681
5. McMulkin ML, Gordon AB, Tompkins BJ, Caskey PM, and Baird GO (2016). Long term gait outcomes of surgically treated idiopathic toe walkers. *Gait and Posture*, 44, 216-220. DOI: 10.1016/j.gaitpost.2015.12.013. PMID: 27004661
6. McMulkin ML and MacWilliams BA (2015). Application of the Gillette Gait Index, Gait Deviation Index and Gait Profile Score to Multiple Clinical Pediatric Populations. *Gait and Posture*, 41(2), 608-612. doi: 10.1016/j.gaitpost.2015.01.005. PMID: 25623856
7. Caskey PM, McMulkin ML, Gordon AB, Posner MA, Baird GO, and Tompkins BJ (2014). Gait outcomes of patients with severe slipped capital femoral epiphysis following treatment by flexion-rotation osteotomy. *Journal of Pediatric Orthopedics*, 34(7), 668-673. doi: 10.1097/BPO.0000000000000180. PMID: 24705348
8. Scully WF, McMulkin ML, Gordon AB, Baird GO, Tompkins BJ, and Caskey PM (2013). Outcomes of rectus femoris transfers in children with cerebral palsy: Effect of Transfer Site. *Journal of Pediatric Orthopedics*, 33(3), 303-308. doi: 10.1097/BPO.0b013e3182784b0c. PMID: 23482268
9. Gordon AB, McMulkin ML, Tompkins BJ, Caskey PM, and Baird GO (2013). Gait findings in the adolescent subject with a stiff hip. *Journal of Pediatric Orthopedics*, 33(2), 139-144. doi: 10.1097/BPO.0b013e31826bb1ea. PMID: 23389567
10. Garcia NL, McMulkin ML, Tompkins BJ, Caskey PM, Mader S, and Baird GO (2011). Gross Motor Development in babies with treated idiopathic clubfoot. *Pediatric Physical Therapy*, 23(4), 347-352.
11. Gordon AB, McMulkin ML, and Baird GO (2011). Modified goal attainment scale outcomes for ambulatory children: With and without orthopedic surgery. *Gait and Posture*, 33(1), 77-82.
12. MacWilliams BA, McMulkin ML, Baird GO, and Stevens PM (2010). Distal tibial rotation osteotomies normalize frontal plane knee moments. *Journal of Bone and Joint Surgery American*, 92(17), 2835-2842.
13. McMulkin ML and Gordon AB (2009). The effect of static standing posture on dynamic walking kinematics: Comparison of a thigh wand versus a patella marker. *Gait and Posture*, 30(3), 375-378.
14. Jahn J, Vasavada AN, and McMulkin ML (2009). Calf muscle-tendon lengths before and after Tendo-Achilles lengthenings and gastrocnemius lengthenings for equinus in cerebral palsy and idiopathic toe walking. *Gait and Posture*, 29, 612-617.

## Journal Publications (continued)

15. McMulkin ML, Gordon AB, Caskey PM, Ferguson RL, and Baird GO (2008). Range of motion measures under anesthesia compared to clinical measures for children with cerebral palsy. *Journal of Pediatric Orthopedics - British*, 17(6), 277-280.
16. McMulkin ML and MacWilliams BA (2008). Intersite variations of the Gillette gait index. *Gait and Posture*, 28(3), 483-487.
17. Gordon AB, Baird GO, McMulkin ML, Caskey PM, and Ferguson RL (2008). Gait analysis outcomes of percutaneous medial hamstring lengthenings in children with cerebral palsy. *Journal of Pediatric Orthopedics*, 28(3), 324-329.
18. McMulkin ML, Baird GO, Gordon AB, Caskey PM, and Ferguson RL (2007). The pediatric outcomes data collection instrument detects improvements for children with ambulatory cerebral palsy following orthopedic intervention. *Journal of Pediatric Orthopedics*, 27(1), 1-6.
19. McMulkin ML, Baird GO, Caskey PM, and Ferguson RL (2006). Comprehensive outcomes of surgically treated idiopathic toe-walkers. *Journal of Pediatric Orthopedics*, 26(5), 606-611.
20. McMulkin ML, Baird GO, Barr KM, Caskey PM, and Ferguson RL (2005). Proximal rectus femoris release surgery is not effective in normalizing hip and pelvic variables during gait in children with cerebral palsy. *Journal of Pediatric Orthopedics*, 25(1), 74-78.
21. Goodman MJ, Menown JL, West Jr JM, Barr KM, Vander Linden DW, and McMulkin ML (2004). Secondary gait compensations in individuals without neuromuscular involvement following a unilateral imposed equinus constraint. *Gait and Posture*, 20(3), 238-244.
22. McMulkin ML and Ferguson RL (2004). Resting energy expenditure and respiratory quotient in adolescents following spinal fusion surgery. *Spine*, 29(16), 1831-1835.
23. McMulkin ML, Osebold WR, Mildes RD, and Rosenquist RS (2004). Comparison of three pediatric prosthetic feet during functional activities. *Journal of Prosthetics and Orthotics*, 16(3), 78-84.
24. Hennington G, Johnson J, Penrose J, Barr K, McMulkin ML, and Vander Linden DW (2004). Effect of bench height on sit-to-stand in children without disabilities and children with cerebral palsy. *Archives of Physical Medicine and Rehabilitation*, 85(1), 70-76.
25. McMulkin ML, Woldstad JC, and Hughes RE (2003). Optimization model estimates of trunk muscle forces do not correlate with EMG activity of females as well as males. *Journal of Applied Biomechanics*, 19(2), 131-138.
26. McMulkin ML, Gulliford JJ, Williamson RV, and Ferguson RL (2000). Correlation of static to dynamic measures of lower extremity range of motion in cerebral palsy and control populations. *Journal of Pediatric Orthopaedics*, 20(3), 366-369.
27. Osebold WR and McMulkin ML (2000). Point of view editorial (on Lavender et al., "Effects of a lifting belt on spine moments and muscle recruitments after unexpected sudden loading"). *Spine*, 25(12), 1578.
28. Mital A, Pennathur A, Huston RL, Thompson D, Pitman M, Markle G, Kaber DB, Crumpton LL, Bishu RR, Rajurkar KP, Rajan V, Fernandez JE, McMulkin M, Dievanayagam S, Ray PS, and Sule DR (1999). The need for worker training in advanced manufacturing technology (AMT) environments: A white paper. *International Journal of Industrial Ergonomics*, 24(2), 173-184.
29. Pennathur A, Mital A, Rajan V, Kaber D, Ray P, Huston R, Thompson D, Markle G, Pitman MA, Bishu R, Crumpton L, Dievanayagam S, Fernandez J, McElwee M, McMulkin M, and Sule D (1999). A framework for training workers in contemporary manufacturing

## Journal Publications (continued)

- environments. *International Journal of Computer Integrated Manufacturing*, 12(4), 291-310.
30. McMulkin ML, Woldstad JC, and Hughes RE (1998). Torso loading via a harness method activates trunk muscles less than a hand loading method. *Journal of Biomechanics*, 31(4), 391-395.
  31. McMulkin ML and Woldstad JC (1995). Effects of wheel design on torques applied to large handwheels. *International Journal of Industrial Ergonomics*, 15, 205-213.
  32. Woldstad JC, McMulkin ML, and Bussi C (1995). Forces applied to large hand wheels. *Applied Ergonomics*, 26(1), 55-60.
  33. McMulkin ML and Kroemer KHE (1994). Usability of a one-hand ternary chord keyboard. *Applied Ergonomics*, 25(3), 177-181.

## Book Chapters

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1. McMulkin ML (1999). Biomechanics, Biomechanics of Lifting, Biomechanical Modeling, Biomechanics of Spine, Biomechanical Risk Factors, Occupational Biomechanics. In A. Mital and M.M. Ayoub (Eds.), *Industrial and Occupational Ergonomics: Users' Encyclopedia (on CD-ROM)*, The International Journal of Industrial Engineering.

## Abstracts

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1. McMulkin ML and MacWilliams BA (2017). Comparison of walking versus running foot kinematics with a segmented foot model. *22nd Annual Meeting of the Gait and Clinical Movement Analysis Society*, Salt Lake City, UT (E-Poster Presentation).
2. MacWilliams BA, McMulkin ML, Davis RB, Westberry DE, Baird GO, and Stevens PM (2016). Biomechanical changes associated with femoral derotational osteotomy for idiopathic anteversion. *21st Annual Meeting of the Gait and Clinical Movement Analysis Society*, Memphis, TN (Podium Presentation).
3. Baird D, McMulkin ML, Tompkins BJ, Caskey PM, Mildes RD, Harrison BC, Mader SM, Garcia NL, and Baird G (2016). Causes of internal foot progression for children treated for clubfeet: results at five years of age. *21st Annual Meeting of the Gait and Clinical Movement Analysis Society*, Memphis, TN (Podium Presentation).
4. Bean BK, Baird GO, Tompkins BJ, Bronson WE, McMulkin ML, Caskey PM. (2016). Results of Early Hip Reconstructive Surgery in Severely Involved Children with Cerebral Palsy. *American Academy of Orthopaedic Surgeons (AAOS)*, March 1 - 5, Orlando, FL. (Podium Presentation)
5. Baird GO, McMulkin ML, Gordon AB, Caskey PM, and Tompkins B (2015). Outcomes of multi-level surgery with and without external femoral derotation osteotomy in children with cerebral palsy. *Pediatric Orthopaedic Society of North America* (Podium Presentation).
6. Baird GO, Garcia NL, Tompkins BJ, Caskey PM, McMulkin ML, Mildes RD, Harrison BC, and Mader SM (2015). Functional outcomes of children treated as infants with the Ponseti and Dimeglio methods at five years of age. *20th Annual Meeting of the Gait and Clinical Movement Analysis Society*, Portland, OR (Podium Presentation).
7. Gordon AB, McMulkin ML, Tompkins B, Caskey PM, and Baird GO (2014). Long term gait outcomes of idiopathic toe walkers. *American Academy for Cerebral Palsy and Developmental Medicine* (Poster Presentation).

## Abstracts (continued)

8. McMulkin ML, Gordon AB, Tompkins B, Caskey PM, and Baird GO (2014). Long term gait outcomes of idiopathic toe walkers. *19th Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp 301-2, Podium Presentation).
9. Baird GO, McMulkin ML, Gordon AB, Huck M, Tompkins B, and Caskey PM (2014). Prevalence of autism spectrum disorder in children that present with toe walking. *Pediatric Orthopaedic Society of North America* (pp. 326, Poster Presentation).
10. McMulkin ML, Gordon AB, Huck M, Tompkins B, Baird GO, and Caskey PM (2013). Prevalence of autism spectrum disorder in children that present with toe walking. *18th Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp 187-8, Podium Presentation).
11. McMulkin ML, Gordon AB, Scully WF, Tompkins B, Baird GO, and Caskey PM (2013). Outcomes of rectus femoris transfers in children with cerebral palsy: Effect of transfer site. Submitted to *18th Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp 275-6, Poster Presentation).
12. Baird GO, Garcia NL, Tompkins BJ, Caskey PM, McMulkin ML, Mildes RD, Harrison BC, Mader SL. (2013). Functional outcomes of children treated as infants with the Ponseti and Dimeglio methods five years of age. *Pediatric Orthopaedic Society of North America* (pp. 197-8, Podium Presentation).
13. Baird GO, Garcia NL, McMulkin ML, Tompkins BJ, Caskey PM, Mildes RD, Harrison BC, Mader SL (2012). Five Year Outcomes of Idiopathic Clubfoot Treated with Ponseti and Dimeglio Methods. *Ponseti International Clubfoot Symposium* (Poster Presentation) Oct 4 – 5, Iowa City, IA.
14. Gordon AB, McMulkin ML, Scully WF, Tompkins B, Baird GO, and Caskey PM (2012). Outcomes of rectus femoris transfers in children with cerebral palsy: Effect of transfer site. *European Society of Movement Analysis for Adults and Children* (pp 171, Poster Presentation). Stockholm, Sweden.
15. Caskey PM, Scully WF, McMulkin ML, Gordon AB, Tompkins B, and Baird GO (2012). Outcomes of rectus femoris transfers in children with cerebral palsy: Effect of transfer site. *Pediatric Orthopaedic Society of North America* (pp 97, Podium Presentation). Denver, CO.
16. Scully WF, Caskey PM, McMulkin ML, Gordon AB, Tompkins B, and Baird GO (2012). Outcomes of rectus femoris transfers in children with cerebral palsy: Effect of transfer site. Western Orthopedic Association (WOA) annual meeting, Portland, OR.
17. Scully WF, Tompkins BJ, Caskey PM, Baird GO, McMulkin ML (2011). Distal rectus femoris transfer in cerebral palsy: Analysis of the role of transfer site on gait outcome. *Society of Military Orthopaedic Surgeons (SOMOS) Annual Meeting* (Poster Presentation), Vail, CO.
18. Gordon AB, McMulkin ML, and Baird GO (2011). Gait findings in the adolescent subject with a stiff hip. In proceedings, *16th Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp 178-9, Poster Presentation). Bethesda, MD: GCMAS.
19. McMulkin ML, Posner M, Gordon AB, Caskey PM, Tompkins B, Baird GO (2011). Gait outcomes of patients with severe slipped capital femoral epiphysis following treatment by flexion-rotation osteotomy. In proceedings, *16th Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp 188-9, Poster Presentation). Bethesda, MD: GCMAS.

## Abstracts (continued)

20. Gordon AB, McMulkin ML, Baird GO (2011). Case study: Use of 3D computerized gait analysis running to identify decompensation of hip rotation for excessive in-toeing. In Proceedings, *16th Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp 42-3, Podium Presentation). Bethesda MD: GCMAS.
21. Garcia N, Baird G, McMulkin M, Tompkins B, Caskey P, Mader S (2011). Early gross motor development in babies with treated idiopathic clubfeet. *Physical Therapy Combined Sections Meeting*, Feb 2011.
22. McMulkin ML, Gordon AB, Caskey PM, Tompkins B, and Baird GO (2010). Outcomes of multi-level surgery with and without an external femoral derotational osteotomy in children with cerebral palsy. In Proceedings, *2nd Joint ESMAC & GCMAS Meeting (JEGM)* (pp 270-1, Poster Presentation). Miami, FL: GCMAS.
23. Gordon AB, McMulkin ML, and Baird GO (2010). Goal attainment scale outcomes for ambulatory children: with and without orthopedic surgery. In Proceedings, *2nd Joint ESMAC & GCMAS Meeting (JEGM)* (pp 274-5, Poster Presentation). Miami, FL: GCMAS.
24. McMulkin ML and MacWilliams BA (2010). Application of the Gillette Gait Index Gait Deviation Index and Gait Profile Score to several clinical pediatric populations. In Proceedings, *2nd Joint ESMAC & GCMAS Meeting (JEGM)* (pp 161-2, Podium Presentation). Miami, FL: GCMAS.
25. Garcia NL, Baird GO, McMulkin ML, Tompkins BJ, Caskey PM, and Mader S (2010). Early gross motor development in babies with treated idiopathic clubfeet. In proceedings, *Pediatric Orthopaedic Society of North America 25th annual meeting* (E-poster). Honolulu, HI.
26. Posner M, McMulkin ML, Tompkins BJ, Baird GO, and Caskey PM (2010). Gait outcomes of patients with SCFE following treatment by flexion rotation osteotomy. *American Academy of Orthopaedic Surgeons Annual Meeting* (Podium Presentation), March 9-11, New Orleans, LA.
27. Posner M, McMulkin ML, Caskey PM, Baird GO, and Tompkins BJ (2009). Gait outcomes of patients with severe slipped capital femoral epiphysis (SCFE) following treatment by flexion rotation osteotomy. *Society of Military Orthopaedic Surgeons Annual Meeting* (Podium Presentation), Dec 14-18, Honolulu, HI.
28. Caskey PM, Baird GO, Tompkins BJ, Antosh IJ, McMulkin ML (2009). Outcomes of medial malleolar screw hemiepiphyodesis for ankle valgus. 84th annual meeting of the *North Pacific Orthopaedic Society* (Podium Presentation), Oct 1-3, Sunriver, OR.
29. Baird G, Gordon A, Caskey P, Tompkins B, and McMulkin M (2009). Pelvic tilt did not change following diaphyseal external femoral derotational osteotomy in children with cerebral. *Developmental Medicine & Child Neurology (American Academy for Cerebral Palsy and Developmental Medicine 63rd Annual Meeting*, Scottsdale, AZ). 51(Suppl 5): 1-2. (Podium Presentation).
30. Baird G, McMulkin M, and Gordon A (2009). Goal attainment scale for ambulatory children with cerebral palsy: with and without orthopedic surgery. *Developmental Medicine & Child Neurology (American Academy for Cerebral Palsy and Developmental Medicine 63rd Annual Meeting*, Scottsdale, AZ). 51(Suppl 5): 48-49. (Poster Presentation).
31. MacWilliams B, McMulkin M, Baird G, and Stevens P (2009). Distal tibial rotation osteotomies normalize frontal plane knee moments. In proceedings, *Pediatric Orthopaedic Society of North America 25th annual meeting* (p. 242, e-poster). Boston, MA.

## Abstracts (continued)

32. Caskey PM, Baird GO, Tompkins BJ, McMulkin ML, and Antosh IJ (2009). Complications of medial malleolar screw hemiepiphysiodesis for ankle valgus. In proceedings, *Pediatric Orthopaedic Society of North America 25<sup>th</sup> annual meeting* (p. 170, podium). Boston, MA.
33. McMulkin M and Gordon A (2009). The effect of static standing posture on dynamic walking kinematics: comparison of a patella marker versus a thigh wand. In proceedings, *14<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp. 59-60, Podium Presentation). Denver, CO: GCMAS.
34. MacWilliams B, McMulkin M, Baird G, and Stevens P (2009). Distal tibial rotation osteotomies normalize frontal plane knee moments. In proceedings, *14<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp. 52-53, Podium Presentation). Denver, CO: GCMAS.
35. Zuchetto T, Starr NT, Skinner T, and McMulkin M (2008). Quality of life for adolescents with physical disabilities related to participating in organized sports. *American Therapeutic Recreation Association 2008 Research Institute*. Las Vegas, NV.
36. Baird GO, McMulkin ML, Caskey PM (2008). Range of motion measures under anesthesia compared to clinical measures for children with cerebral palsy. *Pediatric Orthopaedic Society of North America annual meeting* (Podium Presentation), April 29 – May 3, 2008, Albuquerque, NM.
37. Baird G, McMulkin M, and Gordon A (2008). Posterior tibialis EMG for a patient with closed head injury for treatment planning. In proceedings, *13<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium Presentation). Richmond, VA: GCMAS.
38. Schwartz M, MacWilliams B, McMulkin M, and Wren T (2008). A multi-center evaluation of two comprehensive gait pathology indices using clinical samples. In proceedings, *13<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium Presentation). Richmond, VA: GCMAS.
39. Evans CJ, Caskey P, Baird G, and McMulkin M (2007). Laterality of developmental dysplasia of the hips in males: Is the distribution of left, right and bilateral developmental dysplasia of hips equivalent between males and females. *Society of Military Orthopaedic Surgeons Annual Meeting* (Podium Presentation), December 2007, Vail, CO.
40. McMulkin M and MacWilliams B (2007). Intersite variations of the normalcy index. In proceedings, *12<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Springfield, MA: GCMAS.
41. MacWilliams B and McMulkin M (2007). Intersite variations of the normalcy index in one able bodied subject. In proceedings, *12<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Springfield, MA: GCMAS.
42. Jahn J, McMulkin M, and Vasavada A (2007). Calf muscle lengths increase after tendo-achilles lengthenings but not vulpius procedure surgeries for equinus. In proceedings, *12<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Springfield, MA: GCMAS.
43. Piazza SJ, Chou LS, Denniston NL, McMulkin ML, Quigley EJ, Richards JG, Schwartz MH (2007). A proposed standard for assessing the marker-location accuracy of video-based motion analysis systems. In proceedings, *12<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium Presentation). Springfield, MA: GCMAS.
44. McMulkin M, Gordon A, Ferguson R, Caskey P, and Baird G (2006). Range of motion measures under anesthesia compared to clinical measures for children with cerebral palsy. *1st Joint ESMAC & GCMAS Meeting* (Poster Presentation). Amsterdam: GCMAS.



## Abstracts (continued)

45. Gordon A, Baird G, Caskey P, Ferguson R, and McMulkin M (2006). Gait analysis outcomes of percutaneous medial hamstring lengthenings in children with cerebral palsy. *1st Joint ESMAC & GCMAS Meeting* (Poster Presentation). Amsterdam: GCMAS.
46. Baird G, McMulkin M, Caskey P, and Ferguson R (2006). Comprehensive gait analysis outcomes of surgically treated idiopathic toe-walkers. *1st Joint ESMAC & GCMAS Meeting* (pp. 182-183, Podium Presentation). Amsterdam: GCMAS.
47. Baird GO, McMulkin M, Caskey PM, and Ferguson RL (2006). Gait outcomes of surgically treated idiopathic toe-walkers. In *Proceedings of the Pediatric Orthopaedic Society of North America 2006 Annual Meeting* (pp. 189, E-Poster). San Diego, CA: POSNA.
48. Ferguson RL, Caskey P, McMulkin M, Johnson K, Cho M, and Baird GL (2005). Long term outcomes instrument evaluation of treatment of congenital dislocation of the hip. In *Proceedings of the Pediatric Orthopaedic Society of North America 2005 Annual Meeting* (pp. 160, E-Poster). Ottawa, Ontario: POSNA
49. McMulkin M, Baird G, Caskey P, and Ferguson R (2005). Functional changes assessed by the Pediatric Outcome Data Collection Instrument for children with cerebral palsy before and after lower extremity surgery. *Proceedings of 10<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp. 68-69, Poster Presentation). Portland, OR: GCMAS.
50. McMulkin ML and Osebold W (2004). Predicting frontal plane knee moments in gait from radiographic measurements in children with fibular deficient limbs. In *Proceedings of the Association of Children's Prosthetic-Orthotic Clinics 2004 Annual Meeting* (pp. 18, Podium Presentation). Banff, AB: ACPOC.
51. McMulkin ML, Barr KM, Goodman MJ, Menown JL, West JM, and Vander Linden DW (2003). Secondary gait compensations in normal adults with an imposed unilateral ankle equinus constraint. In *Proceedings of 8<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (pp. 113-114, Podium Presentation). Wilmington, DE: GCMAS.
52. McMulkin ML, Osebold W, Mildes R, and Rosenquist R (2003). Comparison of three prosthetic feet during functional activities. In *Proceedings of the Association of Children's Prosthetic-Orthotic Clinics 2003 Annual Meeting* (pp. 17, Podium Presentation). Tampa, FL: ACPOC.
53. Goodman MJ, Menown JL, West JM, Barr KM, Vander Linden DW, and McMulkin ML (2003). Secondary gait compensations in healthy individuals with a unilateral plantar flexion constraint. *American Physical Therapy Association Combined Sections Meeting* (Podium Presentation). Tampa, FL, February 12-16, 2003.
54. Ferguson RL and McMulkin ML (2002). Resting energy expenditure and respiratory quotient in adolescents following spinal surgery. In *Proceedings of Scoliosis Research Society 37<sup>th</sup> Annual Meeting* (pp. 138, Podium Presentation). Seattle, WA: SRS.
55. Baird GO, Dewees T, Ferguson RL, and McMulkin ML (2002). Treatment of spasticity with oral baclofen in children with cerebral palsy. *Developmental Medicine & Child Neurology (American Academy for Cerebral Palsy and Developmental Medicine 2002 Meeting, New Orleans, LA)*. 44(Supplement No 91), 31.
56. McMulkin ML, Baird GO, Barr KM, Ferguson RL, and Caskey PM (2002). Gait outcomes of children with cerebral palsy following proximal rectus femoris release surgeries. (Poster at the 7<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society, Chattanooga, TN). *Gait and Posture*, 16(Suppl. 1), S57-S58.

## Abstracts (continued)

57. Baird GO, McMulkin ML, Barr KM, Caskey PM, and Ferguson RL (2002). Gait outcomes of children with cerebral palsy following proximal rectus femoris release. In Proceedings of the *Pediatric Orthopaedic Society of North America 2002 Annual Meeting* (pp. 142, Poster Presentation). Salt Lake City, UT: POSNA.
58. Aiello KM, Austin MK, Dyerson JA, Stevenson KJ, Walker MJ, Barr KM, McMulkin ML, Vander Linden DV (2002). Effect of three bench heights on sit-to-stand in children without disabilities. *American Physical Therapy Association Combined Sections Meeting* (Poster Presentation). Boston, MA, February 20-24, 2002.
59. Baird GO, Dewees T, Ferguson RL, and McMulkin ML (2001). Treatment of spasticity with oral baclofen in children with cerebral palsy. *Developmental Medicine & Child Neurology* (Podium Presentation at the *American Academy for Cerebral Palsy and Developmental Medicine 2001 Meeting*, Los Angeles, CA: Conference Cancelled due to 9/11/01). 43(Supplement No 88), 16.
60. Baird G, McMulkin ML, Barr KM, Caskey P, and Ferguson RL (2001). Outcomes of extensive distal rectus femoris release compared to rectus transfer for stiff knee gait. In Proceedings of the *Pediatric Orthopaedic Society of North America 2001 Annual Meeting* (pp. 135, Poster Presentation). Cancun, Mexico: POSNA.
61. Menapace KA, Raley TJ, McMulkin ML, Ferguson RL, and Caskey PM (2001). The relationship of bone age to chronological age. In Proceedings of the *Pediatric Orthopaedic Society of North America 2001 Annual Meeting* (pp. 110, Podium Presentation). Cancun, Mexico: POSNA.
62. McMulkin ML, Barr KM, Ferguson RL, Caskey P, and Baird G (2001). Outcomes of extensive rectus femoris release surgeries compared to transfers (Poster at the 6<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis, Sacramento, CA). *Gait and Posture*, 13(3), 251-252.
63. Osebold WR, McMulkin ML, Christenson DM, and Barr KM (2001). Gait analysis of meningococemia patients with an above-knee prosthesis on one limb and a below-knee prosthesis on the other. In Proceedings of the *Association of Children's Prosthetic-Orthotic Clinics 2001 Annual Meeting* (pp. 22-23, Podium Presentation). Houston, TX: ACPOC.
64. Osebold WR, McMulkin ML, Christenson DM, and Barr KM (2001). Preliminary results with the dynamic pediatric College Park foot in patients with Syme's amputation for fibular hemimelia. In Proceedings of the *Association of Children's Prosthetic-Orthotic Clinics 2001 Annual Meeting* (pp. 21-22, Podium Presentation). Houston, TX: ACPOC.
65. Hennington G, Johnson JB, Penrose J, McMulkin M, and Vander Linden DW (2001). Effect of seat height on sit-to-stand in children with cerebral palsy and children without disabilities. *American Physical Therapy Association Combined Sections Meeting* (Poster Presentation). San Antonio, TX, February 16-19, 2001.
66. McMulkin ML, Gulliford JJ, and Ferguson RL (2000). Correlation of static and dynamic measures of lower extremity range of motion in normal children (Poster at the 5<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis, Rochester, MN). *Gait and Posture*, 11(2), 155-156.
67. McMulkin ML, Osebold W, and Christenson D (2000). Computerized gait analysis in decision making for the limb deficient child. In Proceedings of the *Association of Children's Prosthetic-Orthotic Clinics 2000 Annual Meeting* (pp29-30, Podium Presentation). Banff, AB, Canada: ACPOC.

## Abstracts (continued)

68. Ferguson RL, McMulkin ML, Gulliford JJ, Williamson R, and Caskey P (1999). Correlation between static and dynamic measurements of knee range of motion in cerebral palsy patients. *Pediatric Orthopaedic Society of North America* (Poster Presentation).
69. McMulkin ML, Bahrain KHK, and Malzahn D (1998). A method to determine the workspace of persons with cerebral palsy - a preliminary study. In *Proceedings of RESNA Annual Conference* (pp. 66-68). Minneapolis, MN: RESNA Press.
70. Krohe J, Garcia D, and McMulkin M (1998). Evaluation of the Half-QWERTY<sup>®</sup> one-handed keyboard software. In *Proceedings of RESNA (Rehabilitation Engineering Society of North America) Annual Conference* (pp. 249-251). Minneapolis, MN: RESNA Press.
71. McMulkin ML and Sivasubramanian T (1998). Hand forces in weaker and stronger members during team lifts. *Advances in Occupational Ergonomics and Safety III*. Ann Arbor, MI.
72. McMulkin ML and Fernandez JE (1997). A review of multi-person lifting capabilities. *Advances in Industrial Engineering Applications and Practice II*, Eds. J.G. Chen and A. Mital, pp. 311-316.
73. McMulkin ML and Sivasubramanian T (1997). Hand forces during two-person lifting. *Advances in Industrial Engineering Applications and Practice II*, Eds. J.G. Chen and A. Mital, pp. 361-366.
74. McMulkin ML, Woldstad JC, and Hughes RE (1997). Gender Differences in Model Estimates of Trunk Muscle Activity. *Advances in Occupational Ergonomics and Safety II*, Eds. B. Das and W. Karwowski, pp. 245-248.
75. Malzahn DE, Fernandez JE, Kattel BP, and McMulkin ML (1997). Can ergonomic principles be applied to disability accommodation? In *Proceedings of the 13th Triennial Congress of the International Ergonomics Association, Volume 4*, Tampere Finland, pp. 566-568.
76. Kattel BP, Sivasubramanian K, Fernandez JE, and McMulkin ML (1996). Evaluation of the force exerted by individual fingers during multidigital gripping task. *Advances in Industrial Engineering Applications and Practice I*, Eds. J.G. Chen and A. Mital, pp. 267-272.
77. McMulkin ML (1995). Predicted muscular activity for varying inputs to optimization-based biomechanical trunk models. In *Proceedings of the Human Factors and Ergonomics Society 39th Annual Meeting* (pp. 615-619). Santa Monica, CA: Human Factors and Ergonomics Society.
78. McMulkin ML, Woldstad JC, McMahan PB, and Jones T (1993). Wheel turning strength for four wheel designs. In *Proceedings of the Human Factors and Ergonomics Society 37th Annual Meeting* (pp. 730-734). Santa Monica, CA: Human Factors and Ergonomics Society.
79. Vargo CG, McMulkin ML, Robinson GS, and Mauney DW (1993). An evaluation of computerized document roaming tools. In *Interface '93* (pp. 39-44). Santa Monica, CA: Human Factors and Ergonomics Society.
80. McMulkin ML (1992). Description and prediction of long-term learning of a keyboarding task. In *Proceedings of the Human Factors Society 36th Annual Meeting* (pp. 276-280). Santa Monica, CA: Human Factors Society.
81. Woldstad JC, Rockwell CJ, Johnson CA, McMulkin ML, and McMahan PB (1992). Isometric strength capability for a vertical wheel turning task. In *Proceedings of the Human Factors Society 36th Annual Meeting* (pp. 664-668). Santa Monica, CA: Human Factors Society.

## Other Publications

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1. Osebold WR, McMulkin ML, Barr KM, and Christenson DM (2002). Gait analysis of meningococemia patients with an above-knee prosthesis on one limb and a below-knee prosthesis on the other. *ACPOC News: The Bulletin of the Association of Children's Prosthetic/Orthotic Clinics*, 8(3), 22-31.

## Scientific Presentations

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1. McMulkin ML and MacWilliams BA (2017). Comparison of walking versus running foot kinematics with a segmented foot model. *22nd Annual Meeting of the Gait and Clinical Movement Analysis Society*, Salt Lake City, UT (E-Poster Presentation).
2. MacWilliams BA, McMulkin ML, Davis RB, Westberry DE, Baird GO, and Stevens PM (2016). Biomechanical changes associated with femoral derotational osteotomy for idiopathic anteversion. 21st Annual Meeting of the Gait and Clinical Movement Analysis Society, Memphis, TN (Podium Presentation).
3. McMulkin ML, Gordon AB, Tompkins B, Caskey PM, and Baird GO (2014). Long term gait outcomes of idiopathic toe walkers. 19th Annual Meeting of the Gait and Clinical Movement Analysis Society (Podium Presentation).
4. McMulkin ML, Gordon AB, Huck M, Tompkins B, Baird GO, and Caskey PM (2013). Prevalence of autism spectrum disorder in children that present with toe walking. 18th Annual Meeting of the Gait and Clinical Movement Analysis Society (Podium Presentation).
5. McMulkin ML, Gordon AB, Scully WF, Tompkins B, Baird GO, and Caskey PM (2013). Outcomes of rectus femoris transfers in children with cerebral palsy: Effect of transfer site. Submitted to 18th Annual Meeting of the Gait and Clinical Movement Analysis Society (Poster Presentation).
6. Gordon AB, McMulkin ML, Baird GO (2011). Case study: Use of 3D computerized gait analysis, running to identify decompensation of hip rotation for excessive in-toeing. *16th Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium Presentation). Bethesda, MD.
7. McMulkin ML, Posner M, Gordon AB, Caskey PM, Tompkins B, and Baird GO (2011). Gait outcomes of patients with severe slipped capital femoral epiphysis following treatment by flexion-rotation osteotomy. *16th Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Bethesda, MD.
8. McMulkin ML and MacWilliams BA (2010). Application of the Gillette Gait Index, Gait Deviation Index and Gait Profile Score to several clinical pediatric populations. *2nd Joint ESMAC & GCMAS Meeting, JEGM* (Podium Presentation). Miami, FL.
9. McMulkin M and Gordon A (2009). The effect of static standing posture on dynamic walking kinematics: comparison of a patella marker versus a thigh wand. *14th Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium presentation) Denver, CO.
10. MacWilliams B, McMulkin M, Baird G, and Stevens P (2009). Distal tibial rotation osteotomies normalize frontal plane knee moments. *14th Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium presentation) Denver, CO.
11. Baird G, McMulkin M, and Gordon A (2008). Posterior tibialis EMG for a patient with closed head injury for treatment planning. *13th Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium Presentation). Richmond, VA.

## Scientific Presentations (continued)

12. McMulkin M and MacWilliams B (2007). Intersite variations of the normalcy index. *12<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Springfield, MA.
13. McMulkin M, Gordon A, Ferguson R, Caskey P, and Baird G (2006). Range of motion measures under anesthesia compared to clinical measures for children with cerebral palsy. *1st Joint ESMAC & GCMAS (Gait and Clinical Movement Analysis Society) Meeting* (Poster Presentation). Amsterdam, the Netherlands.
14. McMulkin M, Baird G, Caskey P, and Ferguson R (2005). Functional changes assessed by the pediatric outcome data collection instrument for children with cerebral palsy before and after lower extremity surgery. *10<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Portland, OR.
15. McMulkin ML, Osebold W, Mildes R, and Rosenquist R (2003). Comparison of three prosthetic feet during functional activities. *Association of Children's Prosthetic-Orthotic Clinics 2003 Annual Meeting* (Podium Presentation). Tampa, FL.
16. McMulkin ML, Barr KM, Goodman MJ, Menown JL, West JM, and Vander Linden DW (2003). Secondary gait compensations in normal adults with an imposed unilateral ankle equinus constraint. *8<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Podium Presentation). Wilmington, DE.
17. McMulkin ML, Baird GO, Barr KM, Ferguson RL, and Caskey PM (2002). Gait outcomes of children with cerebral palsy following proximal rectus femoris release surgeries. *7<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Chattanooga, TN.
18. McMulkin ML, Barr KM, Ferguson RL, Caskey P, and Baird G (2001). Outcomes of extensive rectus femoris release surgeries compared to transfers. *6<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis Society* (Poster Presentation). Sacramento, CA
19. McMulkin ML, Gulliford JJ, and Ferguson RL (2000). Correlation of static and dynamic measures of lower extremity range of motion in normal children *5<sup>th</sup> Annual Meeting of the Gait and Clinical Movement Analysis* (Poster Presentation). Rochester, MN.
20. McMulkin ML, Osebold W, and Christenson D (2000). Computerized gait analysis in decision making for the limb deficient child. *Association of Children's Prosthetic-Orthotic Clinics 2000 Annual Meeting* (Podium Presentation). Banff, AB, Canada.
21. McMulkin ML, Bahrain KHK, and Malzahn D (1998). A method to determine the workspace of persons with cerebral palsy - a preliminary study. *Rehabilitation Engineering Society of North America Annual Conference* (Podium Presentation). Minneapolis, MN.
22. McMulkin ML and Fernandez JE (1997). A review of multi-person lifting capabilities. *Advances in Industrial Engineering Applications and Practice II* (Podium Presentation).
23. McMulkin ML and Sivasubramanian T (1997). Hand forces during two-person lifting. *Advances in Industrial Engineering Applications and Practice II* (Podium Presentation).
24. McMulkin ML, Woldstad JC, and Hughes RE (1997). Gender differences in model estimates of trunk muscle activity. *Advances in Occupational Ergonomics and Safety II* (Podium Presentation).
25. McMulkin ML (1995). Predicted muscular activity for varying inputs to optimization-based biomechanical trunk models. In *Proceedings of the Human Factors and Ergonomics Society 39th Annual Meeting* (Podium Presentation). Santa Monica, CA: Human Factors and Ergonomics Society.

## Scientific Presentations (continued)

26. McMulkin ML, Woldstad JC, McMahan PB, and Jones T (1993). Wheel turning strength for four wheel designs. *Human Factors and Ergonomics Society 37th Annual Meeting* (Podium Presentation). Santa Monica, CA: Human Factors and Ergonomics Society.
27. McMulkin ML (1992). Description and prediction of long-term learning of a keyboarding task. *Human Factors Society 36th Annual Meeting* (Podium Presentation). Santa Monica, CA: Human Factors Society.

## Grants

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1. Co-Investigator, Implementation of a Minimum Standardized Gait Analysis Protocol Within SMALnet: Shriners Motion Analysis Laboratory Network, participating hospitals, Chicago, Erie, Greenville, Houston, Intermountain, Lexington, Northern California, Philadelphia, Portland, Shreveport, Spokane, Springfield, Shriners Hospitals for Children Research Grant, 3/99-3/00, \$25,404.
2. Principal Investigator, Multi-Person Lifting Capabilities, Wichita State University Research/Creative Awards, 1/97-6/97, \$4500.

## Courses Taught

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### Undergraduate

Biomechanical Analysis, NEP 362, Washington State University Spokane, Spring 2007, Spring 2009, Spring 2010, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016

Introduction to Human Factors Engineering, University of Idaho  
Work Analysis and Design, Wichita State University & Virginia Tech  
Safety Engineering, Wichita State University  
Senior Design Project (Capstone Course), Wichita State University  
Engineering Economy, Wichita State University  
Introduction to Industrial Engineering, Virginia Tech

### Graduate

Biomechanics, University of Idaho & Wichita State University  
Cognitive Ergonomics, Wichita State University  
Probability and Statistics II, Wichita State University

## Honors and Awards

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- Best Paper Award, Gait and Clinical Movement Analysis Society 14<sup>th</sup> Annual Meeting, 2009 (McMulkin M and Gordon A. The effect of static standing posture on dynamic walking kinematics: comparison of a patella marker versus a thigh wand.)
- Tau Beta Pi
- Alpha Pi Mu (Industrial Engineering Honor Society)
- Nominated for Wichita State Univ. Board of Trustees Excellence in Teaching Award, 1997
- Nominated for Wichita State Univ. Academy for Effective Teaching Award, 1997
- Interface Conference 1993, first place student paper competition
- Alumni Award for Excellence, University of Idaho, 1989

## **Professional Activities and Memberships**

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1. Gait and Posture: Reviewer (2005-Present), Editorial Board (2016-Present)
2. Journal of Rehabilitation Research and Development: Reviewer
3. Gait and Clinical Movement Analysis Society, member 1999 – Present
4. Co-Program Chair, Gait and Clinical Movement Analysis Society Annual Meeting, 2015 (Portland, OR) and 2017 (Salt Lake City, UT)
5. Gait and Clinical Movement Analysis Society, member Awards Committee, 2005-2011
6. Journal of Applied Biomechanics: Assistant Editor, Musculoskeletal Biomechanics Section, 2003 - 2005
7. American Society of Biomechanics, member 1999 - Present
8. International Society of Biomechanics, member 1999 - Present
9. Advisory Council Member, Biological Systems Engineering Department, Washington State University, 2000 - 2002
10. Human Factors and Ergonomics Society, member 1990 – 2003; Program Chair: Industrial Ergonomics Technical Group – 2001 & 2002; President Virginia Tech Chapter - 1993

## **Seminars / Other Presentations**

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1. Tricks of the Trade – Important Key Lab Practices. SMALnet Consortium meeting, Sacramento, CA, 11/17/16 – 11/18/16.
2. A Systematic, Objective Documentation to Movement (May 2017, May 2016, June 2015, June 2014, June 2013, June 2012, May 2011, May 2010, May 2009, May 2008, May 2007, May 2006, May 2005, May 2004, May 2002, May 2001). Spokane Falls Community College Physical Therapy Assistant Program.
3. Introduction to Gait Analysis (Mar 2010). Biomedical Engineering Club Class, Washington State University.
4. Clinical Guidelines for Observational Gait Analysis, Lecture as part of 1-day continuing education course titled, Pediatric Orthopedic Review for Primary Care Providers, (April 2010, May 2007)
5. A Systematic, Objective Documentation to Movement (July 2013, July 2010, June 2001, June 2000). Eastern Washington University Physical Therapy Program.
6. Introduction to Clinical Research (Sept 2009, Feb 2009, Sept 2008). Seminar for students attending Whitworth University Class.
7. Introduction to Computerized Gait Analysis (July 2009, July 2008, July 2006, July 2005). Seminar for High School Teachers attending Washington State University Program.
8. A Systematic, Objective Documentation to Movement (June 2002, Sept 2001, Oct 2000, Sept 1999, Oct 1998). North Idaho College Physical Therapy Assistant Program.
9. Normal Gait (Nov 1999). Pediatric Orthopaedic Review, Presented by Shriners Hospitals for Children-Spokane.

## **Graduate Students**

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1. Thangavelu Sivasubramanian, M.S. Project, 1998, Chair, Wichita State University
2. Kamariah-Hazlina Kamarul Bahrain, M.S. Project, 1997, Chair, Wichita State University
3. Bheem Kattel, Ph.D., 1998, Member, Wichita State University
4. Bijaya Aryal, M.S. Project, 1998, Member, Wichita State University
5. Kimberly Devlin, M.S. Project, 1998, Member, Wichita State University
6. Dishayne Garcia, M.S. Project, 1998, Member, Wichita State University
7. Anand Soosai, M.S. Project, 1998, Member, Wichita State University
8. Ban Yee Chee, M.S. Project, 1997, Member, Wichita State University
9. Chandan Gohkale, M.S. Project, 1997, Member, Wichita State University
10. Timothy Bevins, M.S. Project, 1996, Member, Wichita State University
11. Mansoor Poonawala, M.S. Project, 1996, Member, Wichita State University

## **Other Students Advised**

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1. Jessica Jahn, Undergraduate McNair Research Project, 2006, Washington State University
2. Michael Huck, MS-4, Shriners Hospitals for Children First Lady Helen Lemieux Internship Program, Fall 2011, University of Washington.
3. Daniel Baird, MS-2, Shriners Hospitals for Children First Lady Helen Lemieux Internship Program, Summer 2015, University of Washington.



As the President marked, apart from financial effect, the amnesty of shadow funds can become the step to the formation of "trust economy". The researches, conducted by "Tsentr Razumkova" sociological service [13], attest to the fact that, according to the condition for 31.03.2004, the legalization of shadow funds was considered as necessary by 61,4 % of citizens.Â vid nezakonnogo obigu narkotichnikh zasobiv, psikhotropnikh rechovin, ikh analogiv abo prekursoriv: Abstract of Thesis PhD in Law. "Ðš., 2010. 21. Suslov N. The impact of energy prices on the size of the shadow economy: cross-country analysis / N. Suslov, S. Ageyeva.