*Curriculum Vitae*

James J. Carollo

Updated March 2015

**1. BIOGRAPHICAL SKETCH**

**Associate Professor**, University of Colorado Denver, Anschutz Medical Campus

Department of Physical Medicine and Rehabilitation, School of Medicine

Department of Orthopedics, School of Medicine

Department of Bioengineering, College of Engineering and Applied Science

**Director**, Center for Gait and Movement Analysis (CGMA) – 9/98-present

Children’s Hospital Colorado

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**Director**, Musculoskeletal Research Center (MRC) – 1/06-present

Children’s Hospital Colorado

Dr. Carollo is the Director of the Center for Gait and Movement Analysis (CGMA) and the Musculoskeletal Research Center (MRC), both at The Children's Hospital in Denver, and currently holds faculty appointments at the University of Colorado Denver (UC Denver), Colorado School of Mines (CSM) and University of Denver. He also periodically supervises graduate students at UC Boulder and UC Colorado Springs.

Opened in July, 1999, CGMA is the first and only clinical movement analysis laboratory in Colorado, and the only program at Children's Hospital to evaluate both children and adults. The Center’s mission is to comprehensively analyze movement disorders associated with neuromuscular and orthopedic conditions, using advanced measurement tools and a unique multidisciplinary approach. The goal is to identify critical gait abnormalities and recommend comprehensive treatment to restore functional ambulation in any individual with less than optimal walking performance. Dr. Carollo was recruited to design this state-of-the-art facility after creating separate centers at Texas Scottish Rite Hospital for Children and the University of Texas Southwestern Medical Center, both in Dallas, Texas

Created in January, 2006, the MRC is a multidisciplinary research group established to promote and conduct advanced clinical outcomes research in the field of Pediatric Orthopaedics. It draws upon the clinical excellence of Children's Hospital Colorado Orthopaedic Surgery and Rehabilitation Medicine departments and the analytical expertise of clinical scientists and biomedical engineers, to create a clinical research infrastructure that can support research in spinal deformity, cerebral palsy, sports medicine and other musculoskeletal disorders in children.

**2. EDUCATION**

Texas A&M University, College Station, TX 1979  **B.S. Bioengineering**

Texas A&M University, College Station, TX 1982 **M.S. Bioengineering**

University of Texas at Arlington 1998 **Ph.D. Biomedical Engineering**

University of Texas

Southwestern Medical Center at Dallas (joint program) Arlington and Dallas, TX

Dissertation Title: ***A Model of Gait Performance Based on Functional Sub-System Quantification***

1/80–12/80 **Bioengineering Clinical Internship**

Texas Scottish Rite Hospital (TSRH), Dallas, TX

1/86–12/88 **Rehabilitation Engineering Fellowship**

Center for Advanced Rehab Engineering (CARE), University of Texas, Arlington, Arlington, TX

(Professor George Kondraske, Ph.D., Director)

**3. ACADEMIC APPOINTMENTS**

3/10 – present **Associate Professor (Affiliated Faculty),** Department of Bioengineering, University of Colorado Denver, School of Engineering and Applied Sciences, Anschutz Medical Campus

11/09 - present **Adjunct Associate Professor,** Department of Integrative Physiology, University of Colorado Boulder

9/08 – present **Adjunct Associate Professor,** Department of Computer Science, University of Colorado Colorado Springs

4/07–present **Associate Professor**, Physical Medicine & Rehabilitation and Orthopaedics Departments, University of Colorado School of Medicine, Anschutz Medical Campus. Unanimously approved for promotion by School of Medicine, 7/07

5/14-5/19 **Guest Professor**, Yueyang Hospital of Integrated Traditional Chinese & Western Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, China.

9/01–3/07 **Assistant Professor**, Physical Medicine & Rehabilitation and Orthopaedics Departments, University of Colorado at Denver and Health Sciences Center. Research collaboration with faculty; periodic lectures on gait analysis, biomechanics, and movement measurement instrumentation; resident, graduate student, and medical student training; Engineering resource for the departments.

1/03–12/09 **Assistant Research Professor**, Division of Engineering, Colorado School of Mines. Supervison and training of graduate and undergraduate engineering students, research and bioengineering collaboration with CSM faculty; periodic lectures on gait analysis, biomechanics, and movement measurement instrumentation.

7/04-present **Adjunct Assistant Professor**, School of Engineering, University of Denver. Research collaboration with DU faculty and students

9/01-present **Graduate School Faculty (Regular member)**, University of Colorado at Denver and Health Sciences Center. Supervision and training of graduate students

9/00- 6/05 **Graduate School Faculty (External member)**, University of Colorado at Boulder. Supervision and training of graduate students

9/00 - 4/05 **Graduate School Faculty (External member)**, Rocky Mountain School of Health Professions. Supervision and training of graduate students

9/98 – 8/01 **Clinical Assistant Professor**, Rehabilitation Medicine and Orthopaedics Departments, UCHSC. Research collaboration and periodic lectures on gait analysis, biomechanics, and movement measurement instrumentation

9/90 - 12/94 **Research Faculty**, Bioengineering Internship Program, Texas A&M University: Supervised the activities of 4 biomedical engineering master’s students during their 1 year internships at the lab; served as external committee member on their thesis committee

**4. OTHER PROFESSIONAL POSITIONS**

1/80 - 12/80 **Bioengineering Clinical Intern,** Texas Scottish Rite Hospital for Children , Dallas, Texas. Designed, developed, and implemented the TSRH Gait Analysis Lab. With D. Wenger, developed research protocols for the comparative mechanical testing of scoliosis internal fixation devices in-vitro using Holstein calf spines as a physical model of the adolescent spine. With other interns, designed and developed a compression testing (displacement) machine for use in these studies. Developed skills for manuscript preparation and formal presentation.

10/81 - 1/86 **Director of Bioengineering,** Texas Scottish Rite Hospital for Children (TSRH), Dallas, Texas. Created the Bioengineering Dept. at TSRH, for the purpose of providing engineering support to the medical staff, and for developing devices and techniques to improve the lives of handicapped individuals. Implemented and further refined the TSRH Gait Analysis Lab as a clinical facility. Supervised the Graduate Bioengineering Internship Program and developed an undergraduate Co-op program for Texas A&M Bioengineering students. Served administratively as department director. Among other duties, participated in fund raising activities for the hospital, and served as a member of the in-house Research Committee.

1/86 - 1/89 **Rehabilitation Engineering Fellow**,Center for Advanced Rehabilitation Engineering / Human Performance Institute (HPI), The University of Texas at Arlington, Arlington, Texas. Worked with G. Kondraske to develop new research interests in the area of quantification of human performance; specifically, applied existing Institute techniques to develop a resource based model for assessment of human locomotion. This work encompasses the doctoral dissertation. Designed a data base and computer network to support the Institute's activities. Also served as editor of the PARTNERS alumni newsletter and producer of a training video demonstrating proper use of assessment tools.

1/89 - 9/89 **Engineering Consultant**, Dallas Rehabilitation Foundation,

Dallas, Texas. Supervised the design, development, and laboratory site preparation of a new gait analysis facility located in the Dallas area and sponsored by the Foundation. This became the Mobility Research and Assessment Laboratory. Responsible for planning and implementation of all engineering, technical, equipment procurement, and operational aspects of the new facility.

9/89 – 8/98 **Senior Research Scientist**,Mobility Research and Assessment Laboratory, Department of Orthopaedic Surgery and Department of Physical Therapy, UT Southwestern Medical Center at Dallas. Supervised research and engineering operations of this modern gait analysis facility. Prepared and administered budgets, supervised technical and administrative staff, and in general assured proper operation of the laboratory. Prepared research proposals, designed experiments, and compiled technical reports for presentation or publication. Supervised and trained graduate students in biomedical engineering and physical therapy during their clinical rotations. Supported all departmental computer resources. Worked with the Clinical Director (P. Winchester) and Medical Director (F. Gottschalk) to develop new programs and long term strategy.

**5. HONORS, SPECIAL RECOGNITIONS, AND AWARDS**

1. Bioengineering Clinical Internship Award, Third recipient

Carl B. and Florence E. King Foundation

1986 Tau Beta Pi Engineering Honor Society (Texas eta chapter)

1986 Fellowship in Rehabilitation Engineering, First recipient (3-year award)

Dallas Rehabilitation Foundation

1. Outstanding Service Award

IEEE Dallas Section, Engineering in Medicine and Biology Society

1. Engineer of the Year Award

Institute for Electrical and Electronics Engineers (IEEE), Dallas Section,

1994 Nominee for Engineer of the Year Award

Texas Society of Professional Engineer

1. Research Scholar Award

The Children’s Hospital Research Institute

2007 IEEE Senior Member

Institute for Electrical and Electronics Engineers

2012 J.T. Tai & Co. Endowment – CGMA Program – First recipient

2014 “Certification of Honor” 3rd Zhangjiang International Forum on Traditional Chinese Medicine

Shanghai University of Traditional Chinese Medicine

**6. MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

9/89-present IEEE Engineering in Medicine and Biology Society, Member

Secretary /Treasurer, Dallas/Fort Worth Chapter, 1989-1991

Chairman, Dallas/Fort Worth Chapter, 1991-1993

Vice-Chairman, Dallas/Fort Worth Chapter, 1994.

1/98–present Gait and Clinical Movement Analysis Society (GCMAS), Member

Accreditation committee member (11/00 – 4/08)

GCMAS Representative to CMLA Board of Directors (5/03-present)

5/01–present American Society of Biomechanics (ASB), Member

11/13-present Orthopedic Research Society (ORS), Member

11/13-present American Congress of Rehabilitation Medicine (ACRM), Member

Previous memberships

6/06-12/08 International Society of Electromyography and Kinesiology, Member

1/91 – 12/97 Rehabilitation Engineering and Assistive Technology Society of North America (RESNA)

Member

1/90 - 12/91 Biomedical Engineering Society, Member

**7. COMMITTEE AND SERVICE RESPONSIBILITIES**

10/99 – present National Sports Center for the Disabled (NSCD), Winter Park, CO

Volunteer Ski Instructor, Double Black Diamond Volunteer

5/03 - present Commission for Motion Laboratory Accreditation (CMLA), Wilmington, DE,

GCMAS representative, Board Member

Vice president, (4/04-3/09)

President, (3/09-present)

8/03 – present UC Denver School of Medicine, Orthopedics Department, Orthopaedics Resident Research Committee, Denver, CO, member

7/04 – present UC Denver PM&R Department, Academic Enrichment Fund Steering Committee, member

6/08- present Interdisciplinary Movement Science Laboratory (IMSL), UC Denver PM&R Dept.

Member, Executive Committee

Previous appointments

10/94 – 12/98 Texas Physical Therapy Education & Research Foundation, Foundation Trustee

Vice President, Chairman of Grant Review Committee, 1995-1998

10/00 – 8/02 UCHSC Bioengineering Steering Committee, Denver, CO, Member

7/04 – 3/05 UCDHSC, Department of PM&R, Physical Therapy Program, Denver, CO

PT Chair Search Committee Member

9/06 – 3/09 Gait and Clinical Movement Analysis Society (GCMAS)

Conference Chair, 14th Annual Meeting, 2009, Denver, CO

GCMAS Executive Committee

8/09 - 12/09 The Children’s Hospital, Denver, Research Strategic Planning Committee

Research Themes and Priorities sub-committee

9/98 – 9/10 Rehab Science and Engineering Consortium (RSEC), Denver, CO, Chairman, Goal: Developing a regional, multidisciplinary, research consortium working to expand rehab medicine collaborations between clinical and academic sites in Colorado

3/10-8/10 Chief Research Officer Search Committee, The Children’s Hospital Denver

**8. LICENSURE**

7/93-present Certification for Registration as a Professional Engineer (PE License)

Texas State Board of Registration for Professional Engineers

**10. REVIEW AND REFEREE WORK**

4/06 – present Reviewer, Archives of Physical Medicine and Rehabilitation,

6/06 – present Reviewer, Journal of Biomechanics

4/07– present Reviewer, Gait and Posture

10/09–present Reviewer, Journal of Rehabilitation Research and Development (JRRD)

Previous appointments

4/93 – 8/98 United States Department of Education, Rehabilitation Services Administration

Grant Panel Reviewer, Physical Therapy Competitions

Grant Panel Reviewer, Rehabilitation Technology Competitions

10/94 – 12/98 Texas Physical Therapy Education & Research Foundation, Austin, TX

Foundation Trustee

Chairman of Grant Review Committee, 1995-1998

1/99-12/03 Texas Physical Therapy Education & Research Foundation, Austin, TX

External Grant Reviewer

12/04 10th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Portland.

Scientific Committee, Paper Review

3/06 ISEK 2006, Torino, Italy

Paper Review and Session Co-Chair, Posture and Balance Track

4/06 1st Joint ESMAC-GCMAS Meeting (JEGM06), Amsterdam, The Netherlands.

Scientific Committee, Paper Review,

9/06 1st Joint ESMAC-GCMAS Meeting, (JEGM06), Amsterdam, The Netherlands.

Moderator, Examination of Methods II track

12/06 12th Annual Meeting of the GCMAS, Springfield, MA.

Scientific Committee, Paper Review

3/05-12/07 Journal of Electromyography and Kinesiology, Editorial Committee

**11. LECTURES, PRESENTATIONS AND VISITING PROFESSORSHIPS:**

International

1988 World Congress on Medical Physics and Biomedical Engineering, "A Task Analysis Strategy for Modeling and Assessment of Human Locomotion," **Carollo, JJ**, Kondraske, G, San Antonio, Texas, 1988.

2006 International Society of Electrophysiology and Kinesiology Annual Meeting, ISEK 2006,

Postural Track, **Carollo, JJ,** Benvenuti, F, Session Chairs, Torino, Italy, June 2006.

2006 International Society of Electrophysiology and Kinesiology Annual Meeting, ISEK 2006, “Gait Initiation Differs Between Children with Hemiplegic Cerebral Palsy and Age-Matched Controls,” **Carollo, JJ**, Dezman, ZD, Konieczny, A, Torino, Italy, June, 2006.

2006 1st Joint ESMAC-GCMAS Meeting (JEGM06), “Knee Extension at Terminal Swing: A Missing Critical Gait Event for Children with Spastic Cerebral Palsy,” Valvano, J, **Carollo, JJ**, Lutz, B, Chang, F, Amsterdam, the Netherlands, September, 2006.

2008 17th Annual Meeting of the European Society of Movement Analysis for Adults and Children

(ESMAC), “Workshop: SWOT Appraisal of Clinical Gait Analysis: The American Perspective,” Panel Member, Antalya, Turkey, September 12, 2008.

2010 Joint ESMAC-GCMAS Meeting (JEGM), “*Relationship between Inter-Segmental Coordination and Gait Performance in Children with Spastic Cerebral Palsy and Stiff Knee Gait*. Valvano J, Worster K, Pan Z, Flynn K, Chang FM, Carollo JJ: Podium Presentation. Podium Presentation. Miami FL, May 12-15, 2010.

2011 20th Annual Meeting of the European Society of Movement Analysis for Adults and Children (ESMAC), “*Changes in Inter-Segmental Coordination and Gait Performance after the Rectus Femoris Transfer Procedure in Children with Cerebral Palsy*.” Carollo JJ, Worster K, Pan Z, Chang F & Valvano J. Accepted for podium presentation. Vienna, Austria, September 2011

2014 3rd Zhangjiang International Forum on Traditional Chinese Medicine, Visiting Professor, *Instrumented Gait Analysis for Clinical Movement Assessment,* **Carollo JJ**, Shanghai, China, May 28, 2014.

2014 Yueyang Hospital of Integrated Traditional Chinese & Western Medicine, Visiting Professor, *Instrumented Movement Analysis & Clinical Motion Laboratory Accreditation*, Carollo JJ, Shanghai, China, May 29, 2014.

2014 Heyn, PC and **Carollo, JJ.** *Exercise is Medicine and We Need to Prescribe In Conjunction with Comprehensive Lifestyle Counseling*, Selected as Platform Lecture for the 91st American Congress of Rehabilitation Medicine, Quebec, Canada, October 7 -11, 2014.

National

1. Sixth Annual Conference of the IEEE Engineering in Medicine and Biology Society, **Carollo, JJ**, "A Slow Motion Video/EMG System for Clinical Gait Analysis," Los Angeles, CA, 1984.

1985 Western Kinesiology Society Annual Meeting, **Carollo, JJ**, "A Video/EMG System for Clinical Gait Analysis," San Francisco, CA, 1985.

1985 Segmental Spinal Instrumentation Study Group, "Spinal Instrumentation Research: The Scottish Rite Experience," **Carollo, JJ**, Texas Scottish Rite Hospital, Dallas, TX, May, 1985.

1986 53rd Annual Meeting of the American Academy of Orthopedic Surgeons, "A Slow Motion Video/EMG System for Clinical Gait Analysis," **Carollo, JJ**, Johnston, C, Scientific Exhibit, New Orleans, LA, 1986.

1994 First Annual North American Clinical Gait Conference, “Intra-subject variability of dynamic EMG using surface and intramuscular electrodes,” **Carollo, JJ**, Portland, OR. April, 1994.

1994 Assessment and Control of Spasticity in Upper Motor Neuron Disorders, a Restorative Neurology Short Course, **Carollo, JJ**, “Overview of Gait Analysis Instrumentation,” Baylor College of Medicine, Houston, TX. August, 1994.

1998 3rd Annual Gait and Clinical Movement Analysis Society Meeting, “Predicting Overall Gait Performance from Measures of Strength, Balance, and Coordination: A Comparison of Multiple Regression and Threshold (NCRA) Models,” **Carollo, JJ**, Poster Presentation, San Diego, CA.

2001 6th Annual Gait and Clinical Movement Analysis Society Meeting, “Use of Hidden Markov Models to Classify Gait Abnormalities in Cerebral Palsy,” **Carollo, JJ**, Poster Presentation, Sacramento, CA, April 25, 2001.

2004 9th Annual Gait and Clinical Movement Analysis Society Meeting, “Gait Pattern Classification in Children With Cerebral Palsy: Results From A 12-State Hidden Markov Model Created With A Large Training Set,” **Carollo, JJ**, He, Q, Debrunner, C, Lexington, KY, April 21-24, 2004.

2009 14th Annual Gait and Clinical Movement Analysis Society Meeting, ‘Grip Force Production in the Assisting Hand on Performance of a Bimanual Task: Applications to Hemiplegic Cerebral Palsy,” Valvano J, Davis J, Denniston N, Boulter T, Nicklas T, Carollo JJ. Podium Presentation. Denver, CO. March 10-13, 2009.

2009 American Physical Therapy Association, “*Grip Force Production in the Assisting Upper Extremity of the Child with Hemiplegic Cerebral Palsy: A Complement to Kinematic Analysis*. Valvano J, Davis J, Denniston N, Boulter T, Nicklas T, Carollo JJ. Poster Presentation. Pacific Grove, CA. August 12, 2009.

2010 The North American Society for the Psychology of Sport and Physical Activity Conference, “Use of Nonlinear Gait Analysis Methods to Elucidate Inter-Segmental Coordination Dynamics of Stiff Knee Gait in Children with Cerebral Palsy.” Worster K, Valvano J & Carollo JJ. Podium Presentation. Tucson, AZ, June 10-12, 2010.

2011 16th Annual Gait and Clinical Movement Analysis Society Meeting, “Validity and Reliability of Kinematic Measures in Typically Developing Children during Partial Body Weight Support Treadmill Training”. Denniston N, Welch J, Carollo JJ, Bodkin AW. Poster Presentation. Bethesda MD, April 26-29, 2011.

2011 16th Annual Gait and Clinical Movement Analysis Society Meeting, “Essential Segment Coordination Dynamics for Typical Gait: Applications to Pre-Swing.” Worster K, Valvano J, Carollo JJ: Poster Presentation. Bethesda, MD, April 26-29, 2011.

2011 16th Annual Gait and Clinical Movement Analysis Society Meeting, “A Novel Automated Method for Detecting Heel-Off Using Only Foot Marker Trajectories. *Worster K, Carollo JJ*. Poster Presentation. Bethesda MD, April 26-29, 2011.

2012 Combined Sections Meeting of American Physical Therapy Association, “A Pilot Study Comparing Two Methods of Partial Body Weight Support Treadmill Training.” Bodkin AW, Denniston N, Roybal J, Carollo JJ. Poster presentation. Chicago, IL, February, 2012.

2012 Pediatric Orthopedic Society of North America, “Comparison of Patellar Advancement Techniques in Children with Patella Alta and Cerebral Palsy.” Rhodes J, Chen Q, Hotchkiss M, Worster K, McNair MS, Nguyen A, Chang F, Carollo JJ. Poster presentation. Denver, CO, May, 2012

Local

1987 Neural Networks Mini-Symposium, "A Systems Strategy for Characterization of Neuromuscular Performance," **Carollo, JJ**, Arlington, Texas, 1987.

1992 Dallas Short Course: Prosthetics and Orthotics, "Overview of Gait Analysis Instrumentation," **Carollo, JJ**, Orthopaedic Surgery Department, U T Southwestern, Dallas, Texas, 1992.

1993 Houston Society for Engineering in Medicine and Biology 11th Annual Meeting, "A System for Graphical Synchronization of Movement, Muscle Activity, and Ground Reaction Vectors," **Carollo, J**J, Houston, Texas., 1993

1994 Houston Society for Engineering in Medicine and Biology 12th Annual Meeting, "Sensitivity of the EMG Linear Envelope to Low-Pass Filter Cutoff Frequency: An Investigation Using FIR Digital Filters," **Carollo, JJ**, Wrobbel, J, Houston, Texas, 1994.

1996 1st Annual Marge Barre Clinical Symposium, “Quantitative Gait Analysis and Its Clinical Application,” **Carollo, JJ**, University of Texas Southwestern Medical Center at Dallas, Dallas, Texas

2000 Pills, Pokes, Plasters, and Pumps: Spasticity Management Update, “Computerized Gait and Movement Analysis at the CGMA,” **Carollo, JJ**, Denver, CO, May 6, 2000.

2000 CU Medicine Ball, “Technology Advances in Rehabilitation Medicine,” **Carollo, JJ**, Riegger-Krugh, C, Denver, CO, May 13, 2000.

2000 42nd Packard Memorial Lectureship, “Use of Quantitative Motion Analysis for Clinical Decision Making,” **Carollo, JJ**, Denver, CO, June 2, 2000.

2002 44th Packard Memorial Lectureship, “Idiopathic Scoliosis Alters the Trajectory of the Body’s Center of Mass During Normal Walking,” **Carollo, JJ**, Denver, CO, June 17, 2002.

2002 Rocky Mountain Rehab Society Meeting, “Movement Analysis and Clinical Decision Making,” **Carollo, JJ**, Denver, CO, October 9, 2002.

2003 12th Annual Jerome W. Gersten Lectureship, “Characterization of Whole Body Center of Mass Trajectory During Level Walking in Idiopathic Scoliosis,” **Carollo, JJ**, Denver, CO, June 20, 2003.

2004 TCH Orthopaedic Children’s Day, “Automated Pattern Recognition of Common Cerebral Palsy Gait Patterns,” **Carollo, JJ**, Debrunner, C., He, Q., Denver, CO, April 9, 2004.

2004 13th Annual Jerome W. Gersten Lectureship, “Computer Based Recognition of Common Gait Patterns in Cerebral Palsy,” **Carollo, JJ**, Denver, CO, June 16, 2004.

2004 5th Annual UCDHSC PT Program USA and Japan Health Sciences Conference, “Gait Pattern Classification in Children with Cerebral Palsy: Results From a 12-State Hidden Markov Model Created with a Large Training Set,” **Carollo**, **JJ**, He, Q, Debrunner, C, Aurora, CO, September 21, 2004

2005 14th Annual Jerome W. Gersten Lectureship, “Clinical Research Update: Center for Gait and Movement Analysis,” **Carollo, JJ**, Denver, CO, June 17, 2005.

2006 UCDHSC Orthopaedic Grand Rounds, “Instrumented Gait Analysis for Surgical Decision-Making: Brief Tutorial with Case Examples,” **Carollo, JJ**, Chang F, February, 2006

2006 Children’s Ortho Day 2006, “CGMA Research Update: New Research from the Gait Lab,” **Carollo, JJ**, Valvano, J, Dezman, ZD, Denver, CO, April, 2006.

2006 Children’s Hospital Ortho Day 2006, “Introduction to the Musculoskeletal Research Center at The Children's Hospital,” **Carollo, JJ**, Erickson, M, Denver, CO, April, 2006.

2006 Grand Rounds, Regis University, Department of Physical Therapy, “CGMA Research Update,” Chang F and **Carollo, JJ**, September 2006.

2006 1st Annual Rocky Mountain Academic Spine Research Symposium, “Research Overview of the Musculoskeletal Research Center at The Children's Hospital,” **Carollo, JJ,** UCDHSC, Aurora, CO, October 6, 2006.

2006 1st Annual Musculoskeletal Research Symposium, “Orthopaedic Research at the CGMA and the MRC at The Children's Hospital,” **Carollo, JJ,** UCDHSC, Aurora, CO, October 28, 2006.

2008 Children’s Hospital Orthopadic Day. “Knee Extension At Terminal Swing In Children With Spastic Cerebral Palsy” Valvano J. & **Carollo JJ**. The Children’s Hospital, Aurora, CO. April 18, 2008.

2009 UC Denver PM&R Department Grand Rounds, “Clinical Motion Analysis” **Carollo JJ,** UC Denver Anschutz Medical Campus, Aurora, CO, June 3, 2009.

2010 Children’s Hospital Orthopadic Day. “Relative Phase as a Measure of Coordination Change after Rectus Femoris Transfer Surgery”. Valvano J, Worster K, Flynn, K, Chang FM & **Carollo JJ**. The Children’s Hospital, Aurora, CO. April 16, 2010.

2012 Children’s Hospital Colorado Annual Orthopedic Day Conference, “Comparison of Patellar Advancement Techniques in Children with Cerebral Palsy” **Rhodes J**, Chen Q, Hotchkiss M, Worster K, McNair B, Nguyen A, **Chang F**, **Carollo J**, Aurora, Colorado, April 6, 2012.

**12. TEACHING RECORD**

11/11 **BIOE 5073, Neural Interfaces & Bionic Limbs:** Bioengineering Department UC Denver Anschutz Medical Campus, Co-Instructor, Lower extremity and gait content. Developed and presented a 6-week, 14-hour lecture/laboratory series with Dr. Richard Weir for graduate level bioengineering students. The LE and gait content covered lower extremity anatomy, and all aspects of instrumented gait analysis, including assessment, instrumentations, and analysis. Included homework assignments, exams, and laboratory projects.

11/10-present **BIOE 5010, Life Sciences for Bioengineers:** Bioengineering Department UC Denver Anschutz Medical Campus, Instrumented Gait Analysis Module. Developed and presented a 3 session, 6 hour lecture/laboratory series within the BIOE 5010 course introducing the principles of instrumented motion analysis for the graduate level bioengineering students.

4/10-present **ME 4238/5238, Intro to Sports Engineering:** Mechanical Engineering Department, UC Denver; Developed and presented a series of 4 lectures with associated laboratory session on clinical movement analysis adapted for sports performance assessment.

8/06-present **Orthopaedics Residency Training Program:** Introduction to Clinical Research Lecture Series, Co-Course Director (with Dr. Bennie Lindeque). Developed and presented a series of 3 lectures introducing fundamental research methods to orthopaedic residents. Lecture series offered every 6 months and presented to residents during their ortho tumor rotation at UCDHSC. Topics included formulating hypotheses, levels of evidence, scientific method, type I and II errors and power estimation. Complements biostatistics content taught by Dr. Allison Williams.

9/04–present **PM&R Residency Training Program:** Orthotics & Prosthetics module, Co-Course Director (with Dr. Amit Jha). Developed and presented normal and abnormal gait content, with Dr. Jha, organized course, obtained guest speakers, attended all lectures, and contributed to the final exam.

8/04–present **DPTR 6102, Movement Science II:** UCDHSC PT Program, Co-instructor (with Dr. Riegger-Krugh, Dr. Cory Christianson). Continuation of Movement Science I, with expanded pathologic gait instruction and laboratory demonstrations. Began summer 2005.

8/03-present **BELS 425/525 Musculoskeletal Biomechanics:** Lecturer, Engineering Division, Biomedical Engineering Track, Colorado School of Mines. Series of 2-4 lectures on gait analysis principles, and introduction to normal and pathologic gait for engineering students with a biomedical engineering specialty. Coordinated by Dr. Joel Bach.

8/03-present **BELS 430/530 Biomedical Instrumentation:** Lecturer, Engineering Division, Biomedical Engineering Track, Colorado School of Mines. Series of 2-4 lectures on gait analysis instrumentation and motion capture techniques to engineering students with a biomedical engineering specialty. Coordinated by Dr. Joel Bach.

9/04-6/10 **EGGN 491, 492, Senior Design:** Mentor, Sponsor, Engineering Division, Biomedical Engineering Track, Colorado School of Mines. Provided projects, design ideas, supervision, and financial support to up to 2 student engineering design teams during their required senior year design courses. Coordinated by Dr. Richard Burczyk, CSM Engineering division. Class size: up to 2 groups of 4 senior engineering students, both fall and spring semesters.

8/04–1/07 **DPTR 5101, Movement Science I:** UCDHSC PT Program, Co-instructor (with Dr. Riegger-Krugh). Revised, expanded, and updated course for DPT program based on PHTR 6512 and PHTR 6570. Increased lecture and laboratory hours, and included normal and pathologic gait in the same course. Developed and presented instrumentation, and normal and abnormal gait content.

1/07-2/08 **BELS 598A, Computational Biomechanics:** Lecturer, Engineering Division, Biomedical Engineering Track, Colorado School of Mines. Series of 2-4 lectures on computational methods in movement analysis and motion capture, focusing on their application to clinical movement analysis. Coordinated by Dr. Anthony Petrella, CSM. Class size: up to 15 graduate and senior engineering students, 3-6 class hours each spring semester.

8/03–07/04 **PHTR 6512, Biomechanics:** UCHSC PT Program, Co-instructor (with Dr. Riegger-Krugh). Developed and presented normal gait content. Shared course development responsibility starting in 2003.

8/03–07/04 **PHTR 6570, Evaluation and Examination:** Co-instructor (with Dr. Riegger-Krugh), Developed and presented abnormal gait content. Shared course development responsibility starting in 2003.

9/00 – 11/02 **PHTR 6512 Biomechanics:** Laboratory Instructor, UCHSC PT Program, normal and pathologic gait demonstrations and laboratory exercises, conducted at CGMA

3/00 – 3/01 **MCEN 4228/5228 Special Topics: Biomechanics:** Lecturer, Mechanical Engineering Department, University of Colorado, Boulder. Gait analysis and gait analysis instrumentation lectures

9/95 – 8/98 **Biomechanics**: Co-instructor, UT Southwestern, PT Program, Taught sections on biomaterials, viscoelasticity, material properties, and biomechanics instrumentation and measurement, lecture and lab

9/95 – 8/98 **Pathokinesiology**: Lecturer, UT Southwestern, PT Program, Taught gait analysis instrumentation and normal gait lecture and lab

9/96 – 8/98 **Therapeutic Exercise:** Lecturer, UT Southwestern, PT Program, Taught safe use of isokinetic dynamometry, lecture and lab

9/95 – 8/98 **Physical Agents II:** Lecturer, UT Southwestern, PT Program, Taught lecture on electrical stimulation instrumentation, including oscilloscope waveform demonstration

9/95 – 8/98 **Scientific Inquiry:** Research support, Assisted with 1 to 3 senior research projects each year, primarily in data collection, statistical analysis, and video production

**Student Mentorship and Supervision**

Doctoral Students

9/00–12/04: Laurie Hobbs Degree: D.Sc. Physical Therapy,

Rocky Mountain University for Health Professions, Provo, UT

5/01-8/03: Qiang He Degree: Ph.D., Electrical Engineering

Colorado School of Mines, Golden, CO

1/02-5/06: Amy Winter-Bodkin Degree: Ph.D., Clinical Science Program

University of Colorado Health Sciences Center, Denver, CO

8/11-present: Kate Worster Degree: Ph.D., Biological Engineering

University of Colorado Denver Anschutz Medical Center, Aurora, CO

Residents

8/05-6/06: Dr. Sam Laney Degree: PM&R residency, Department of Physical Med. & Rehab

University of Colorado Health Sciences Center, Denver, CO

3/05-6/08: Dr. Jason Rhodes Degree: Orthopaedic residency, Department of Orthopaedics

University of Colorado Health Sciences Center, Denver, CO

7/06-6/07: Dr. Peter D’Ambrosia Degree: Orthopaedic residency, Department of Orthopaedics

University of Colorado Health Sciences Center, Denver, CO

9/11-06/14: Dr. Adam Seidl Degree: Orthopaedic residency, Department of Orthopaedics

University of Colorado Health Sciences Center, Denver, CO

04/14-present: Meredith Mayo Degree: Orthopaedic residency, Department of Orthopaedics

University of Colorado Health Sciences Center, Aurora, CO

Medical Students

1/06-4/06: Dr. Neda Afzali-Jones Degree: M.D., School of Medicine (post-grad research)

University of Colorado Health Sciences Center, Denver, CO

6/06-8/06: Adam Seidl Degree: M.D. (pending, MSI), School of Medicine

University of Southern California. Los Angeles, CA

04/14-present: Nicole Look Degree: M.D. (pending, MSI), School of Medicine

University of Colorado Health Sciences Center, Aurora, CO

Masters Students

6/01–8/01: Renee Lake Degree: M.S. (Graduate Bioengineering Certificate), Neuroscience,

Colorado State University, Ft. Collins, CO

6/01-5/04: Timothy Nicklas Degree: M.S., Mechanical Engineering,

University of Colorado, Boulder, CO

6/03-05/06: Ann Konieczny Degree: P.A., M.S. Graduate School, Physician’s Assistant Program

University of Colorado Health Sciences Center, Denver, CO

6/05-05/06: Kerry Jones Degree: M.S., Mechanical Engineering (Biomedical option)

Colorado School of Mines, Golden, CO

6/05-6/08: Kristen Baulesh Degree: P.A., M.S. Graduate School, Physician’s Assistant Program

University of Colorado Health Sciences Center, Denver, CO

5/10-5/11: Dominic Bravo Degree: M.S. Mechanical Engineering

Colorado School of Mines, Golden, CO

5/10-8/11: Sara Hogy Degree: M.S. Biomedical Engineering

Colorado State University, Ft. Collins, CO

6/12-05/14: Cassia Cucuel Degree: M.S. Biological Engineering

University of Colorado Denver Anschutz Medical Center, Aurora, CO

07/13-present: Kayla Burnim Degree: M.S. Biological Engineering

University of Colorado Denver Anschutz Medical Center, Aurora, CO

Graduate Internships

8/90-08/91: Glenn Blackwood, Degree: M.S., Bioengineering, (BME Intern)

Texas A&M University, College Station, TX

8/91-08/92: Rasesh Parekh, Degree: M.S., Bioengineering, (BME Intern)

Texas A&M University, College Station, TX

8/92-08/93: Sudha Thimmaraju Degree: M.S., Bioengineering, (BME Intern)

Texas A&M University, College Station, TX

8/92-12/94: Niranjan Manjeshwar Degree: M.S., Bioengineering, (BME Intern)

Texas A&M University, College Station, TX

6/01-5/02: Patrick Galinas Degree: M.S., Kinesiology,(Kinesiology Internship)

University of Colorado, Boulder, CO

6/01-6/03: Timothy Nicklas Degree: M.S., Mechanical Engineering, (BME Intern)

University of Colorado, Boulder, CO

6/03-12/04: Chris Kramer Degree: M.S., Electrical Engineering, (BME Intern)

Colorado School of Mines, Golden, CO

6/04-7/06: Zach Dezman Degree: M.S., Chemical Engineering (BME. Intern)

Colorado School of Mines, Golden, CO

7/05-5/07: Heather Angel Degree: B.S., M.S., Mechanical Engineering (BME Intern)

Colorado School of Mines, Golden, CO

5/10-4/11: Dominic Bravo Degree: B.S., M.S. Mechanical Engineering (BME Intern)

Colorado School of Mines, Golden, CO

5/10-8/11: Sara Hogy Degree: B.S., M.S. Biomedical Engineering (BME)

Colorado State University, Ft. Collins, CO

2/12-7/13: Cassi Cucuel Degree: B.S., M.S., Biomedical Engineering (BME Intern)

University of Colorado Denver Anschutz Medical Center, Aurora, CO

7/13-12/14: Kayla Burnim Degree: B.S., M.S. (pending), Biomedical Engineering (BME Intern)

University of Colorado Denver Anschutz Medical Center, Aurora, CO

Undergraduate Internships

2/00-11/00: Daniel Goodman Degree: B.S., Kinesiology (Kinesiology Internship),

University of Colorado, Boulder, CO

2/00-8/01: Meredith Rose Degree: B.S., Kinesiology (Kinesiology Internship),

University of Colorado, Boulder, CO

6/01–8/01: Mark Adams Degree: B.S., Kinesiology (Kinesiology internship),

University of Northern Colorado, Greeley, CO

6/02–8/02: Brett Fling Degree: B.S., Kinesiology (Kinesiology internship),

University of Northern Colorado, Greeley, CO

10/02-11/03: Megan Outcult Degree: B.S., Kinesiology (Kinesiology internship),

University of Southern California, Los Angeles, CA

6/03-12/03: Sara Read Degree: B.S.., Mechanical Engineering (BME Intern)

Colorado School of Mines, Golden, CO

8/06-6/06: Kat (Muterspaugh) Steele Degree: B.S., Mechanical Engineering (BME Intern)

Colorado School of Mines, Golden, CO

7/11-6/12: Ryan Haun Degree: B.S., Mechanical Engineering (BME Intern)

UC Denver, Denver, CO

5/13-8/13: Ali Senz Degree: B.S. Mechanical Engineering (Summer Intern)

Texas A&M University, College Station, TX

5/14-8/14: Colton Sauer Degree: B.S., Mechanical Engineering (Summer Intern)

Colorado School of Mines, Golden, CO

Physical Therapy Clinical Internships

11/99-4/00: Tatiana Favale Degree: M.P.T., Laboratorio de Marcha

AACD, Sao Paulo-SP, Brazil

6/02-8/02: Laura Dilling Degree: M.S., Physical Therapy (Clinical internship)

University of Colorado Health Sciences Center, Denver, CO

6/03-8/03: Lindsy Krause Degree: M.S., Physical Therapy (Clinical internship)

University of Colorado Health Sciences Center, Denver, CO

12/04-2/05: Meagan Caggiano Degree: D.P.T, Physical Therapy (Clinical internship)

Regis University, Denver, CO

2/05-04/05: Amanda Kocis Degree: D.P.T, Physical Therapy (Clinical internship)

Regis University, Denver, CO

6/05-09/05: Karie Allen Degree: M.S., Physical Therapy (Clinical internship)

University of Colorado Health Sciences Center, Denver, CO

11/05-1/06: Whitney Welsch Degree: D.P.T, Physical Therapy (Clinical internship)

Regis University, Denver, CO

10/06-02/07: Rachel Brink Degree: M.S., Physical Therapy (Clinical internship)

University of Colorado Health Sciences Center, Denver, CO

**13. GRANT SUPPORT (Funded)**

Mar. 2015 $207,031 **National Institute of Neurological Disorders and Stroke (NINDS/NIH),**

(Pending)SBIR R43 Phase I**,** PA-14-071**,** 1R43NS090756-01, “IMove: Instrumented Movement Analysis to Quantify Gait in Cerebral Palsy.” PI: M El-Gohary, Co-I, Site PI: J. Carollo

Dec. 2014 $200,000 **J.T. Tai & Co., Inc.**, “Endowed Program Fund for the Center for Gait and Movement Analysis (CGMA)”, J. Carollo, F. M. Chang

Nov. 2014 $150,000 **J.T. Tai & Co. Foundation**, “Continuing Infrastructure Support for the Center for Gait and Movement Analysis (CGMA)”, PI: J. Carollo

Nov. 2013 $120,000 **J.T. Tai & Co. Foundation**, “Continuing Infrastructure Support for the Center for Gait and Movement Analysis (CGMA)”, PI: J. Carollo

Oct. 2013 $598,501 **National Institute on Disability and Rehabilitation Research (NIDRR),**

FY2013 Field Initiated Research Program, 84.133G, (H133G130200), “Walking and its Effect on Health and Function in Individuals with Cerebral Palsy as they Transition to Adulthood: A Health Outcomes Study.” PI: J. Carollo

Jan. 2013 $120,000 **J.T. Tai & Co. Foundation**, “Infrastructure Support for the Center for Gait and Movement Analysis (CGMA)”, J. Carollo, J. Valvano

Apr. 2012 $1,000,000 **J.T. Tai & Co., Inc.**, “Endowed Program Fund for the Center for Gait and Movement Analysis (CGMA)”, J. Carollo, F. M. Chang

Nov. 2011 $120,000 **J.T. Tai & Co. Foundation**, “2010 Progress Report and 2011 Proposal for

the Center for Gait and Movement Analysis (CGMA),” J. Carollo, J. Valvano

Jan. 2011 $48,000 **Lowe Fund of the Denver Foundation,** “Research Infrastructure Support

CGMA,” J. J. Carollo, J. Dawes

Dec. 2010 $100,000 **J.T. Tai & Co. Foundation**, “2009 Progress Report and 2010 Proposal for

the Center for Gait and Movement Analysis (CGMA),” J. Carollo, J. Valvano

Jun. 2010 $30,510 **Tensegrity Prosthetics, Inc.**, “Clinical Trials Evaluation of the Tensegrity

K3 Promoter Prosthetic Foot”, J. Carollo

Jan. 2006 $300,000 **UC Denver School of Medicine, Dean’s Academic Enrichment Fund,** “Musculoskeletal Research Center (MRC): Progress Report and Continued Funding Request,” M. Erickson, J. Carollo, N. Miller

Oct. 2009 $48,417 **Lowe Fund of the Denver Foundation,** “Research Infrastructure Support

CGMA,” J. Carollo, J. Dawes

Dec. 2009 $100,000 **J.T. Tai & Co. Foundation**, “2008 Progress Report and 2009 Proposal for

the Center for Gait and Movement Analysis (CGMA),” J. Carollo, J. Valvano

Sept. 2008 $126,535 **Medtronics**, “Impact of Spinal Fusion Construct with Sacro-pelvic

Fixation on Gait Dynamics,” M. Erickson, J. Carollo

Aug. 2008 $45,661 **Lowe Fund of the Denver Foundation,** “Research Infrastructure Support

CGMA,” K. Crawley, J. Carollo

Dec. 2008 $100,000 **J.T. Tai & Co. Foundation**, “2007 Progress Report and 2008 Proposal for

the Center for Gait and Movement Analysis (CGMA),” J. Carollo

Mar. 2008 $6,000 **UC Colorado Springs (UCCS),** “International Cooperation on Human Motion Analysis Project: Laban Notation,” J. Carollo

Dec. 2007 $30,000 **The Children’s Hospital Research Institute, “**Rhythmic Auditory

Stimulation as a Gait Intervention for Children with CP,” M. Thaut, J.

Carollo

Dec. 2007 $100,000 **J.T. Tai & Co. Foundation**, “2006 Progress Report and 2007 Proposal for the Center for Gait and Movement Analysis (CGMA),” J. Carollo

Dec. 2006 $100,000 **J. T. Tai & Co. Foundation**, “2005 Progress Report and 2006 Proposal for the Center for Gait and Movement Analysis (CGMA),” J. Carollo

Jan. 2006 $41,500 **Lowe Fund of the Denver Foundation**, “Capital Equipment Support of the Center for Gait and Movement Analysis (CGMA): Portable Oxygen Consumption Measurement System,” K. Crawley, J. Carollo

Jan. 2006 $600,000 **UCDHSC School of Medicine, Dean’s Academic Enrichment Fund,** “Musculoskeletal Research Center (MRC): Preliminary Overview and Business Plan,” M. Erickson and J. Carollo

Dec. 2005 $100,000 **J. T. Tai & Co. Foundation**, “2004 Progress Report and 2005 Proposal for the Center for Gait and Movement Analysis (CGMA),” J. Carollo

Sep. 2004 $100,000 **Lowe Fund of the Denver Foundation**, “Capital Equipment Support of the Center for Gait and Movement Analysis (CGMA) in The Children's Hospital at Fitzsimons,” S. Morrison, J. Carollo

Dec. 2004 $100,000 **J. T. Tai & Co. Foundation**, “Support of Research and Education Opportunities at CGMA,” J. Carollo, F. M. Chang, L. Schaffer

Mar. 2004 $100,000 **Lowe Fund of the Denver Foundation**, “Capital Equipment Support of the Center for Gait and Movement Analysis (CGMA) in The Children's Hospital at Fitzsimons,” S. Morrison, J. Carollo

Dec. 2003 $100,000 **J. T. Tai & Co. Foundation**, “Research Training for Graduate and Medical Student at CGMA,” J. Carollo, F. M. Chang, B. Wills

Dec. 2002 $100,000 **J. T. Tai & Co. Foundation**, “Creation of a Cerebral Palsy Center of Excellence,” J. Carollo, F. M. Chang, B. Wills

Mar. 2002 $100,000 **Lowe Fund of the Denver Foundation**, “Development of the Next Generation Movement Laboratory at The Children’s Hospital,” J. Carollo, B. Wills

Dec. 2001 $100,000 **J. T. Tai & Co. Foundation**, “A Proposal for Expansion of CGMA,” J. Carollo, F. M. Chang, B. Wills

Jan. 2001 $75,000 **Lowe Fund of the Denver Foundation**, “Operations Support for the Center for Gait and Movement Analysis,” J. Carollo, B. Wills

Oct. 2001 $94,500 **NICHDD**, #R21-HD41585-01, “Developing Clinical Trials in Assistive Technology,” D. J. Matthews, C. Bodine, J. Carollo.

Feb. 2001 $69,868 **The Children’s Hospital Research Institute**, “Development and Clinical Validation of New Measures of Dynamic Balance Based on Center of Mass (COM) and Center of Pressure (COP) Determination,” J. Carollo.

July 2000 $49,974 **United Cerebral Palsy Research and Education Foundation**, “The Effects of Verbal and Physical Guidance on the Learning of a Novel Gross Motor Skill by Children with Spastic Cerebral Palsy,” C. B. Heriza, J. Valvano, J. Carollo,

Nov. 1997 $47,570 **U. S. Department of Defense**, MTP-H1, “Measurement of Joint Proprioception,” Part of a larger grant to study Gulf War Syndrome, PI: Dr. Robert Haley, J. J. Carollo and P. Winchester,

(first year funding, total for 3 years $112,584)

Sept 1992 $6,030 **Autry Industries, Inc**., "Comparison of Ground Reaction Forces and Pressure Distribution in Non-Pathologic Subjects Wearing commercially Available Shoes," J.Carollo,

June 1991 $70,382 **Whitaker Foundation**, "Study of Gait Stability of Normals and Post-Polio Patients Using Non-Linear Theory," Y. Hurmuzlu, J. Carollo, and J. W. Aston,

Jan 1991 $8,300 **Rehab Hospital Services Corp. Foundation**, "Use of Afferent Electrical Stimulation to Reduce Calf Hypertonia," J.W. Aston and J. Carollo

Jan 1991 $15,085 **Rehab Hospital Services Corp. Foundation**, "Visual Feedback of Motor Speech Components in Patients with Communication Impairments: Therapeutic Applications,"

D. Bradley and J. Carollo

Feb 1990 $40,000 **Aston Foundation**, "A Glass Top Force Platform for use in Clinical Gait Analysis," J. W. Aston and J. Carollo

Jan 1990 $187,763 **Texas Higher Education Coordinating Board, Advanced Technology Program**, "Development of a Computer Controlled Gait Assist Device for the Spinal Cord Injured," J. W. Aston and J. Carollo

June 1989 $120,900 **Hoblitzelle Foundation**, "A Proposal for Capital Equipment for the Mobility Research and Assessment Laboratory," J. W. Aston and J. Carollo

Jan 1989 $200,000 **Mobility Foundation**, "A Proposal for the Establishment of the Mobility Research and Assessment Laboratory," J. Carollo and J. W. Aston

**Pending Grant Support:**

Mar. 2015 $150,000 **J.T. Tai & Co. Foundation**, “2014 Continuing Infrastructure Support for the Center for Gait and Movement Analysis (CGMA)”, PI: J. Carollo

Feb. 2015 $699,718 **National Institute of Child Health and Human Development (NIHCD/NIH)**, R01 submission, 1R01HD081132-01, PA-13-302, “Musculoskeletal Simulation Guided Therapy for Children with Cerebral Palsy”, PI: Max Kurz, Co-I, Site PI: J. Carollo

**14. BIBLIOGRAPHY**

**Peer Reviewed Journals**

1. Wenger, DR, **Carollo, JJ**, Wilkerson, JA, Wauters, K, and Herring, JA: Laboratory testing of segmental spinal instrumentation for scoliosis treatment. Spine, 7:265-269, 1982.
2. Wenger, DR, **Carollo, JJ**, and Wilkerson, JA: Biomechanics of scoliosis correction by segmental spinal instrumentation. Spine, 7:260-264, 1982.
3. Wenger, DR. and **Carollo, JJ**: Unstable thoracolumbar fractures: Mechanics of stabilization by segmental fixation. Clinical Orthopedics, 189:89-96, 1984.
4. Szalay, EA, **Carollo, JJ**, and Roach, JW: Sensitivity of spinal cord monitoring to intraoperative events. Journal of Pediatric Orthopedics, 6:437-441, 1986.
5. Aston, JW, Williams, S, Allard R, Sawamura, S and **Carollo, JJ**: A new canine cruciate ligament formed through distraction histogenesis. Clinical Orthopaedics and Related Research, 280:30-36, July 1992.
6. Winchester, PK, **Carollo, JJ**, Parekh, RN: A comparison of paraplegic gait performance using two types of reciprocating gait orthoses. Pros Orth Internat 17:101-106, September 1993.
7. Hurmuzlu, Y, Basdogan, C, and **Carollo, JJ**: Presenting Joint Kinematics of Human Locomotion Using Phase Plane Portraits and Poincare Maps. Journal of Biomechanics, 27(12):1495-1499, 1994.
8. Winchester, P, **Carollo, JJ**, and Habasevich, R: Physiologic costs of reciprocal gait in FES assisted walking. Paraplegia 32:680, 1994.
9. Winchester, PK, **Carollo, JJ**, and Wrobbel, J: Reliability of gait temporal distance measures in normal subjects with and without EMG electrodes. Gait and Posture, 4: 21-25, 1995.
10. Martin, M, Shinberg, M, Kuchibhatla, M, Ray, L, **Carollo, JJ**, Schenkman, M: Gait Initiation in Community-Dwelling Adults with Parkinson’s Disease: Comparison with Older and Younger Adults without the Disease; Physical Therapy, 82(6):566-577, June 2002.
11. **Carollo, JJ** and Matthews, D.: Strategies for Clinical Motion Analysis Based on Functional Decomposition of the Gait Cycle; Physical Medicine and Rehabilitation Clinics of North America, 13: 949-977, 2002.
12. Chang FM, Seidl AJ, Muthusamy K, Meininger AK, and **Carollo, JJ**: Effectiveness of Instrumented Gait Analysis in Children with Cerebral Palsy: Comparison of Outcomes. Journal of Pediatric Orthopaedics, 26(5):612-16, 2006.
13. Muthusamy, K, Seidl, AJ, Friesen, RM, **Carollo, JJ**, Pan, Z, Chang, FM: Rectus Femoris Transfer in Children with Cerebral Palsy: Evaluation of Transfer Site and Preoperative Indicators. Journal of Pediatric Orthopaedics, 28(6):674-678, September 2008.
14. Chang FM, Rhodes J, Flynn K & **Carollo JJ**: The Role of Gait Analysis in Treating Gait Abnormalities in Cerebral Palsy. Orthopaedic Clinics of North America, October 2010.
15. Powell D, **Carollo J**, Kumar R, Schenkman M, Xia R, Threlkel AJ: Regularity of lower extremity movement in patients with Parkinson’s disease treated by deep brain stimulation. Gait and Posture, (submitted June 2013).
16. Gala R, Carry PM, Worster K, Kanai S, Miller NH, Provance A, **Carollo JJ**: Characterizing Center of Pressuer Displacement among Adolescent Females with Patellofemoral Pain During a Single Limb Squat. Journal of Athletic Enhancement, (submitted 2014).
17. Biedermann R, Dammerer D, Kaufmann G, Fischler S, **Carollo JJ**, Reinthaler A, Huber DG, Braito M. Are our Expectations Bigger than the Results we Achieve? A Comparative Study Analyzing Potential Advantages of Ankle Arthroplasty over Arthrodesis. International Orthopaedics. April 2014.
18. Oliveira T, **Carollo J**J, Robertson D, Pan Z, Heyn P. Incidence of Epilepsy in Adults with Cerebral Palsy and Secondary Health Outcomes: A Review and Proposed Feasibility Study. Journal of Neurological Disorders, 2(6), October 2014.
19. Worster K, Valvano J, **Carollo JJ**: Sagittal Plane Coordination Dynamics of Typically Developing Gait. Clinical Biomechanics, 2014 [Pending].
20. Valvano J, Hogy S, Worster K, Ma J, Denniston N, Winders P, Rapport MJ, **Carollo JJ**. Analysis of Reach to Grasp by School-Aged Children with Down Syndrome Elucidates Limitations in Upper Extremity Motor Control. Physical and Occupational Therapy in Pediatrics, [Submitted February 2015].
21. Valvano J, Worster K, Pan Z, Chang F, Ma J, **Carollo JJ**. Contribution of Motor Control Change to Gait Outcomes after Orthopedic Surgery in Children with Cerebral Palsy: A Retrospective Analysis. Physical Therapy.  [Submitted November 2014].

**Book Chapters, Invited Articles, & Reviews**

1. **Carollo, JJ**: Clinical gait analysis. Medical Electronics. 68:95-99, 1981
2. **Carollo, JJ**: Development of an effective system for the clinical analysis of gait. Masters Thesis, Bioengineering Program, Texas A & M University, 1982.
3. Wenger, DR and **Carollo, JJ**: Biomechanics of segmental spinal instrumentation. In: Segmental Spinal Instrumentation. E.R. Luque (Ed.) Thorofare, NJ: Slack, Inc., 1984.
4. **Carollo, JJ**: Book Review of Electronic Devices for Rehabilitation. J.G. Webster (Ed.), In: Annals of Biomedical Engineering, 15(5):528-530, 1987.
5. Kondraske, GV, Jafari M, and **Carollo JJ**: Human performance measurement: Some perspectives. IEEE EMBS Magazine, 7(1):11-16, 1988.
6. Aston, JW and **Carollo, JJ**: Biomechanics of walking and running. In: Sports Medicine of the Lower Extremity. S. Subotnick (Ed.) Churchill-Livingstone Inc., 1988.
7. **Carollo, JJ**: A Model of Gait Performance Based on Functional Sub-System Quantification. Doctoral Dissertation, Joint Program in Biomedical Engineering, University of Texas at Arlington, University of Texas Southwestern Medical Center at Dallas, 1998.
8. **Carollo, JJ**: Clinical Gait Analysis Comes to Colorado; The Standard, 10(1): 1-3, 2000.
9. **Carollo, JJ** and Matthews, D: The Assessment of Human Gait, Motion, and Motor Function. In Pediatric Rehabilitation: Principles & Practice.M. Alexander & D. Matthews D (Eds.) Demos Medical Publishers, 2009.
10. Chang, F, Rhodes, J, Davies K, and **Carollo, J**: The Role of Gait Analysis in Children with Cerebral Palsy. Lower Extremity Reviews, 3(8): August 2011, pp 47-51.
11. **Carollo, JJ** and Matthews, D: Quantitative Assessment of Gait and Motion: A Systematic Approach. In Pediatric Rehabilitation: Principles & Practice, Fifth Edition,M. Alexander & D. Matthews D (Eds.) Demos Medical Publishers, 2015.

**Refereed Scientific Abstracts**

1. Wenger, DR., Wauters, K, Herring, JA, and **Carollo, JJ**: Comparative mechanics of segmental spinal instrumentation versus traditional Harrington instrumentation in scoliosis treatment-laboratory analysis. 15th Annual Meeting of the Scoliosis Research Society, Chicago; Transactions, 1980. [Podium]
2. Johnston, CE, Ashman, RB, and **Carollo, JJ**: Comparative stiffness of Zielke and Dwyer: instrumentation in three point bending. 18th Annual Meeting of the Scoliosis Research Society, New Orleans; Transactions, 1983. [Podium]
3. **Carollo, JJ**, and Kondraske, GV: The role of quantification in FES: A preliminary survey. 8th Annual IEEE Engineering in Medicine and Biology Society Conference; Fort Worth, Proceedings, 1986. [Podium]
4. **Carollo, JJ**, and Kondraske, GV: The prerequisite resources for walking: Characterization using a task analysis strategy. 9th Annual IEEE Engineering in Medicine and Biology Society Conference; Boston, Proceedings, 1987. [Podium]
5. **Carollo, JJ**, and Kondraske, GV: Biped model for determining selected performance resource requirements during gait. 10th Annual IEEE Engineering in Medicine and Biology Society Conference; New Orleans, Proceedings, 1988. [Podium]
6. **Carollo, JJ**, Kondraske, GV: A task analysis strategy for modeling and assessment of human locomotion. World Congress on Medical Physics and Biomedical Engineering, San Antonio, Texas, 1988. [Podium]
7. **Carollo, JJ**: A video system for real-time synchronization of muscle activity and joint moments during gait. RESNA International 1992; Toronto, Proceedings, June 6-11, 1992. [Podium]
8. Winchester, P and **Carollo, JJ**: Afferent stimulation of the S1, S2 dermatomes for calf spasticity in hemiparetic patients. RESNA ‘93; Las Vegas, Proceedings, June 12-17, 1993. [Podium]
9. Basdogan, C and **Carollo, JJ**: Variability of the physiologic cost index during free and forced walking. Southern Biomedical Engineering Conference, 1993. [Podium]
10. **Carollo, JJ**, Parekh, R, and Winchester, P: Calibration and force correction of the F-Scan™ foot pressure measurement system. RESNA ‘93; Las Vegas, Proceedings, June 12-17, 1993. [Podium]
11. **Carollo, JJ**, Wrobbel, J, and Winchester, P: Sensitivity of the EMG linear envelope to low-pass filter cut off frequency. 12th Annual Houston Conference on Biomedical Engineering, Houston Society for Engineering in Medicine and Biology, 12:136, February 1994. [Podium]
12. Winchester, P, **Carollo, JJ**, and Wrobbel, J: The effect of surface and intramuscular EMG electrodes on the temporal distance measures of gait. First Annual North American Clinical Gait Conference, Portland, OR, April, 1994, Published in: Gait & Posture, 2(1): 66, 1994. [Podium]
13. **Carollo, JJ**, Winchester, P, and Wrobbel, J: Intra-subject variability of dynamic EMG using surface and intramuscular electrodes. First Annual North American Clinical Gait Conference, Portland, OR, April, 1994, Published in: Gait & Posture, 2(1): 52, 1994. [Podium]
14. Winchester, P, **Carollo, JJ**, and Habasevich, R: Physiologic costs of reciprocal gait in paraplegic subjects using the Parastep® system. American College of Sports Medicine 1994 Annual Meeting, Indianapolis, IN, June, 1994, Published in: Medical Science Sports and Exercise, 26(5): S48, 1994. [Poster]
15. Gottschalk, F, **Carollo JJ**: Influence of prosthetic alignment on ground reaction forces and temporal distance measures of below knee amputees. International Society for Prosthetics and Orthotics 8th World Conference, Melbourne, Australia, October, 1995. [Podium]
16. **Carollo, JJ**, Williamson, J, Winchester, P: Comparison of Oxygen Uptake and Physiologic Cost Index (PCI) at Submaximal Walking Velocities; RESNA ‘96, Proceedings, Salt Lake City, UT, June 7-12, 1996. [Podium]
17. **Carollo, JJ**: Predicting overall gait performance from measures of strength, balance, and coordination: a comparison of multiple regression and threshold models; Third Annual Meeting of the North American Society of Gait and Clinical Movement Analysis, San Diego, CA, April, 1998, Published in: Gait & Posture, 7:187, 1998. [Poster]
18. Kondraske, GV, **Carollo, JJ**: Performance theory based performance prediction and limiting resource determination. In A.M. Sherwood (Ed), Seventeenth Annual Houston Conference on Biomedical Engineering Research, Houston, (pp 152), 1999. [Podium]
19. **Carollo, JJ**, Debrunner, C, He, Q, and Chang, F: Use of Hidden Markov Models to Classify Gait Abnormalities in Cerebral Palsy. 6th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Sacramento, CA, April, 2001, Published in: Gait & Posture, 13(3): 279, May, 2001. [Poster]
20. Komistek, R, Kane, T, Mahfouz, M, **Carollo, JJ**, Langer, T, and Dennis, D: In vivo determination of joint and muscle forces in the human leg. 70th Annual Meeting, American Academy of Orthopaedic Surgeons, Scientific Exhibit SE510, New Orleans, LA, February 5-9, 2003. [Exhibit]
21. **Carollo, JJ**, Nicklas, T, and Chang, FM: Validation of whole body COM calculation in children using the gait initiation task. 8th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Wilmington, DE, May 7-10, 2003. [Poster]
22. **Carollo, JJ**, He, Q, Debrunner, C: Gait pattern classification in children with cerebral palsy: results from a 12-state hidden Markov model created with a large training set. 9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Lexington, KY, April 21-24, 2004. [Podium]
23. Chang F, Meininger, AK, **Carollo JJ**: Comparison of outcomes in children with cerebral palsy when the recommendations from gait analysis are observed. 9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Lexington, KY, April 21-24, 2004. [Podium]
24. Threlkeld, J, **Carollo JJ**, Denniston, N, Kumar, R, Schenkman, M: EMG activity of anti-gravity muscles during treadmill walking with support in people with Parkinson’s disease and deep brain stimulators. 9th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Lexington, KY, April 21-24, 2004. [Poster]
25. Chang FM, Seidl AJ, **Carollo JJ**: Comparison of surgical recommendations for children with cerebral palsy and known outcomes with and without comprehensive gait analysis. 10th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Portland, OR. April, 2005. [Podium]
26. Chang FM, Seidl AJ, **Carollo JJ**: Comparison of outcomes in children with cerebral palsy when the recommendations from gait analysis are observed. Pediatric Orthopaedic Society of North America (POSNA), Ottawa, Canada, May, 2005. [Podium]
27. Valvano J, **Carollo JJ**, Heriza CG: Motor learning by children with cerebral palsy: Kinematic indicators of change associated with practice and physical guidance. III Step Conference: Symposium on Translating Evidence into Practice: Linking Movement, Science and Intervention, Sponsored by Section on Neurology and Pediatrics, American Physical Therapy Association, Salt Lake City, UT, July, 2005. [Podium]
28. Chang FM, Seidl AJ, Muthusamy K, Pan Z, and **Carollo JJ**: Outcome of rectus femoris transfer in children with cerebral palsy: evaluation of pre-operative indications and transfer site. 59th Annual Meeting of the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM), Orlando, FL, September, 2005. [Poster]
29. Threlkeld, AJ, **Carollo JJ**, Kumar, R, Denniston, NL, Pan, Z, Schenkman, ML: Biomechanical vs. neurological influences on hypokinetic gait in Parkinson’s disease. World Parkinson Congress, Washington, DC, February 22-26, 2006. [Podium]
30. Foster, R, Zuk, J, Polaner, D, **Carollo, JJ**, Stallwood, L: Behavioral and physiologic correlates of children’s self-reported pain: a pilot study. 7th International Symposium on Pediatric Pain, Vancouver, British Columbia, June, 2006. [Poster]
31. **Carollo, JJ**, Dezman, ZD, Konieczny A: Gait initiation differs between children with hemiplegic cerebral palsy and age-matched controls. XVI Congress of the International Society of Electrophysiology and Kinesiology: ISEK 2006, Torino, Italy, June 28 – July 1, 2006. [Podium]
32. Bodkin, AW, **Carollo, JJ**, Glueck, DH: Home-based treadmill training in ambulatory children with hemiplegic cerebral palsy. 60th Annual Meeting of the American Academy of Cerebral Palsy and Developmental Medicine (AACPDM 2006), Boston, MA, September, 2006. [Podium]
33. Valvano, J, **Carollo, JJ**: Practice of a functional bimanual task by children with hemiplegic cerebral palsy: a pilot study. 60th Annual Meeting of the American Academy of Cerebral Palsy and Developmental Medicine (AACPDM 2006), Boston, MA, September, 2006. [Podium]
34. Valvano, J, **Carollo, JJ**, Lutz, B, Chang, F: Knee Extension at Terminal Swing: A missing critical gait event for children with spastic cerebral palsy. 1st Joint ESMAC-GCMAS Meeting (JEGM06), Amsterdam, the Netherlands, September, 2006. [Podium]
35. Muthusamy, K, Seidl, A, Friesen, RM, Pan, Z, **Carollo, JJ**, Chang, F: The effect of preoperative baseline values on dynamic hip function in children with cerebral palsy following psoas lengthening surgery. 1st Joint ESMAC-GCMAS Meeting (JEGM06), Amsterdam, the Netherlands, September, 2006. [Poster]
36. Muthusamy, K, Seidl, A, Friesen, RM, Pan, Z, **Carollo, JJ**, Chang, F: Rectus femoris transfer in children with cerebral palsy: evaluation of transfer site and preoperative indicators. 1st Joint ESMAC-GCMAS Meeting (JEGM06), Amsterdam, the Netherlands, September, 2006. [Poster]
37. Dezman, ZD, **Carollo, JJ**: Center of mass kinematics during gait initiation in children with cerebral palsy. 1st Joint ESMAC-GCMAS Meeting (JEGM06), Amsterdam, the Netherlands, September, 2006. [Poster]
38. Rhodes, J, **Carollo, JJ**, Dezman, ZD, Chang, M: Changes in hip kinematics as a result of rectus femoris transfer with and without hamstring lengthening in children with cerebral palsy. 1st Joint ESMAC-GCMAS Meeting (JEGM06), Amsterdam, the Netherlands, September, 2006. [Poster]
39. Angel, H, Valvano, J, Carollo, JJ: Dynamic measurement of intra-limb coordination: applications to equinus gait patterns in children with cerebral palsy. 12th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Springfield, MA. April, 2007. [Podium]
40. Friesen, RM, Recktenwall-Work, S, Pan, Z, **Carollo, JJ**, Chang, FM: Analysis of Angular Velocity of the Sagittal Knee Flexion Curve and Other Common Preoperative Indicators for Rectus Femoris Transfer in Children with Cerebral Palsy. Gait and Clinical Movement Analysis Society 13th Annual Meeting (GCMAS08), Richmond, VA, April 2-5, 2008. [Podium]
41. Valvano, J, **Carollo, JJ**, Pan, Z, Chang, FM: Patterns of Precursor Events Associated with Limitations in Knee Extension at Terminal Swing. Gait and Clinical Movement Analysis Society 13th Annual Meeting (GCMAS08), Richmond, VA, April 2-5, 2008. [Podium]
42. Valvano J, Davis J, Denniston N, Boulter T, Nicklas T & **Carollo JJ**: Grip Force Production in the Assisting Hand on Performance of a Bimanual Task: Applications to Hemiplegic Cerebral Palsy. Gait and Clinical Movement Analysis Society 14th Annual Meeting, Denver, CO, March 10-13, 2009. [Podium]
43. Tulk KNB, Recktenwall-Work SM, Friesen RM, Pan Z, Chang FM & **Carollo JJ**: Use of Gait Analysis and Physical Exam Data for Surgical Decision Making in the Correction of Equinus Gait Deformity in Children with Cerebral Palsy. Gait and Clinical Movement Analysis Society 14th Annual Meeting, Denver, CO, March 10-13, 2009. [Poster]
44. Torres F, Knight K, Wang Y, **Carollo JJ**, Chow, E & Sudhanshu, S: Improve Rehab Patient Care with Laban Specification and Wireless Sensor Tracking. Gait and Clinical Movement Analysis Society 14th Annual Meeting, Denver, CO, March 10-13, 2009. [Poster]
45. Valvano J, Worster K, Pan Z, Chang FM & **Carollo JJ**: Relationship between Inter-Segmental Coordination and Gait Performance in Children with Spastic Cerebral Palsy and Stiff Knee Gait. Joint meeting of the Gait and Clinical Movement Analysis Society and European Society for Movement Analysis in Adults and Children, Miami FL, May 13, 2010. [Podium]
46. Worster K, Valvano J & **Carollo JJ**: Use of Nonlinear Gait Analysis Methods to Elucidate Inter-Segmental Coordination Dynamics of Stiff Knee Gait in Children with Cerebral Palsy. The North American Society for the Psychology of Sport and Physical Activity Conference, Tucson, AZ, June 10-12, 2010. [Podium]
47. Worster K, Valvano J, **Carollo JJ**: Essential Segment Coordination Dynamics for Typical Gait: Applications to Pre-Swing. The 16th Annual Gait and Clinical Movement Analysis Society Meeting, Bethesda MD, April 26-29, 2011. [Poster]
48. Worster K, **Carollo JJ**: A Novel Automated Method for Detecting Heel-Off Using Only Foot Marker Trajectories. The 16th Annual Gait and Clinical Movement Analysis Society Meeting, Bethesda MD, April 26-29, 2011. [Poster]
49. Denniston N, Welch J, **Carollo JJ**, Bodkin AW: Validity and Reliability of Kinematic Measures in Typically Developing Children During Partial Body Weight Support Treadmill Training. The 16th Annual Gait and Clinical Movement Analysis Society Meeting, Bethesda MD, April 26-29, 2011. [Poster]
50. **Carollo JJ**, Worster K, Pan Z, Chang F & Valvano J: Changes in Inter-Segmental Coordination and Gait Performance after the Rectus Femoris Transfer Procedure in Children with Cerebral Palsy. 20th Annual Meeting of the European Society of Movement Analysis for Adults and Children. Vienna, Austria, September 15-17, 2011. [Podium]
51. Heyn P, Abreu B, Ottenbacher K, **Carollo J**: Mixed-Reality Therapy for Adults with Cognitive Impairments. 20th Annual Meeting of the European Society of Movement Analysis for Adults and Children. Vienna, Austria, September 15-17, 2011. [Poster]
52. Gala R, Carry P, Worster K, Kanai S**,** Provance A, Miller NH, **Carollo J**: [Stability During Single Limb Squat in Adolescent Females with Patellofemoral Pain](file:///C:\WINDOWS\Temporary%20Internet%20Files\Content.Outlook\PDFs\Abstracts\Carollo\ORS%202012%20unblinded.pdf). Orthopaedic Research Society (ORS), San Francisco, CA, February 4-7, 2012. [Poster]
53. Provance A, Carry P, Kanai S, Worster K, Polousky J, James D, **Carollo J**: [Results of a Hip Strengthening Intervention Among Adolescent Females with Idiopathic Patellofemoral Pain](file:///C:\WINDOWS\Temporary%20Internet%20Files\Content.Outlook\PDFs\Abstracts\Provance\Provance_AMSSM_2012.pdf): American Medical Society for Sports Medicine (AMSSM), Atlanta, Georgia, April 20-25, 2012. [Poster]
54. Rhodes J, Qing-Min C, Hotchkiss M, Worster K, McNair B, Nguyen A, Chang F, **Carollo J**: Comparison of Patellar Advancement Techniques in Children with Patella Alta and Cerebral Palsy. Pediatric Orthopedic Society of North America (POSNA), Denver, Colorado, May 16-19, 2012. [Symposium]
55. Bodkin AW, Denniston N, Roybal J, **Carollo JJ**: A Pilot Study Comparing Two Methods of Partial Body Weight Support Treadmill Training. Combined Sections Meeting of American Physical Therapy Association, Chicago, IL, February, 2012. [Poster]
56. Gala R, Carry P, Worster K, Kanai S**,** Provance A, Miller NH, **Carollo J**: [Stability During Single Limb Squat in Adolescent Females with Patellofemoral Pain](file:///C:\WINDOWS\Temporary%20Internet%20Files\Content.Outlook\PDFs\Abstracts\Carollo\ORS%202012%20unblinded.pdf). Pediatric Academic Society (PAS), Boston, MA, April 28-May 1, 2012. [Poster]
57. **Carollo JJ**, Robertson D, Nicklas TS, Erickson MA: Impact of Spinal Fusion for Scoliosis Correction on Gait. The 18th Annual Gait and Clinical Movement Analysis Society Meeting, Cincinnati OH, May 14-17, 2013. [Poster]
58. **Carollo JJ**, Robertson D, Nicklas TS, Erickson MA: Spinal Fusion Impacts Range-of-Motion and Walking Ability in Adolescents with Scoliosis. American Congress of Rehabilitation Medicine, Orlando FL, November 12-16, 2013. [Poster]
59. Heyn PC, **Carollo JJ**, Robertson D: Transition to Adulthood in Cerebral Palsy: Does Independent Walking Make a Difference? American Congress of Rehabilitation Medicine, Orlando FL, November 12-16, 2013. [Poster]
60. **Carollo JJ**, Ma J, Robertson D, Chang F, Novias E: Pelvic Tilt and Rotation in Hip Radiographs Can be Estimated using Anatomical Landmarks to Avoid Incorrect Clinical Measurements. Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014. [Poster]
61. Biedermann R, Dammerer D, Kaufmann G, Fischler S, **Carollo JJ**, Reinthaler A, Huber DG, Braito M: What Is The Benefit Of Ankle Arthroplasty? A Comparative Study Analyzing Potential Advantages Of Ankle Arthroplasty Over Arthrodesis. The 15th European Federation of National Associations of Orthopaedics and Traumatology Congress, London, United Kingdom, June 4-6, 2014. [Podium]
62. Valvano J, Hogy S, Denniston N, Worster K, Winders P, Pan Z, **Carollo JJ**: Kinematic Analysis of Reach to Grasp by Children with Down Syndrome. 19th Annual Gait and Clinical Movement Analysis Society Meeting, University of Deleware, Newark, DE, June 24-27, 2014. [Podium]
63. Worster K, Pan Z, Valvano J, **Carollo JJ**: Evidence of Critical Coordination Events in the Swing Period of Gait. 19th Annual Gait and Clinical Movement Analysis Society Meeting, University of Deleware, Newark, DE, June 24-27, 2014. [Podium]
64. Worster K, Valvano J, **Carollo JJ**: A Method for Identifying Coordination Events in the Gait Cycle. 19th Annual Gait and Clinical Movement Analysis Society Meeting, University of Deleware, Newark, DE, June 24-27, 2014. [Poster]
65. Worster K, Kanai S, **Carollo JJ**: Do Nonlinear Measures Offer Clinical Insights Undetected by Conventional Instrumented Gait Analysis Measures? 19th Annual Gait and Clinical Movement Analysis Society Meeting, University of Deleware, Newark, DE, June 24-27, 2014. [Poster]
66. Robertson DM, Garg S, Niswander C, **Carollo JJ**: Novel Use of Motion Capture Reveals Variability in Routine Clinical Measures of Scoliosis. 19th Annual Gait and Clinical Movement Analysis Society Meeting, University of Delaware, Newark, DE, June 24-27, 2014. [Poster]
67. Pan Z, Guo W, Worster K, Denniston N, **Carollo J**: Random subject effects from a non-linear mixed effect model summarize the deviation of a sagittal plane knee kinematic curve from a typical normal curve. 19th Annual Gait and Clinical Movement Analysis Society Meeting, University of Delaware, Newark, DE, June 24-27, 2014. [Poster]
68. Robertson DM, **Carollo JJ**, Niswander C, Garg S: Variability of Patient Standing Position in Operative Adolescent Idiopathic Scoliosis: A Motion Capture Analysis. American Academy of Orthopedic Surgeons, Las Vegas, Nevada, March 24-28, 2015. [Poster]
69. Robertson DM, **Carollo JJ**, Niswander C, Garg S: There is variability of patient standing position in operative adolescent idiopathic scoliosis (AIS) patients: A motion capture analysis. Pediatric Orthopaedic Society of North America, Atlanta, Georgia, April 29-May 2, 2015. [e-Poster]
70. Seidl A, Baldini T, Rhodes J, **Carollo JJ**: Biomechanical Assessment of Three Patellar Advancement Procedures for the Treatment of Patella Alta in Children with Cerebral Palsy. Orthopaedic Research Society Annual Meeting, Las Vegas, NV, March 28 – 31, 2015. [Poster]
71. Sauer CD, **Carollo JJ**: GDI Representative Gait Cycle Selection: Does Side Matter? Gait and Clinical Movement Analysis Society, Portland OR, March 18-21, 2015. [Poster]
72. Worster K, Valvano J, **Carollo JJ**: An Index for Coordination Dynamics. Gait and Clinical Movement Analysis Society, Portland OR, March 18-21, 2015. [Podium]

**Non-refereed Scientific Abstracts**

1. **Carollo, JJ**: Design alternatives for the clinical engineer: Session overview. 18th Annual Meeting of the Association for the Advancement of Medical Instrumentation, Dallas; Proceedings, 1983. [Podium]
2. Debrunner, C, **Carollo, JJ**, and He, Q: Classification of gait abnormalities using continuous hidden Markov models. World Multiconference on Systemics, Cybernetics and Informatics, Orlando, Florida, 2002 [Podium].
3. Nicklas, T, **Carollo, JJ**: Novel whole body center of mass calculation during functional gait tasks for clinical balance assessment. Biowest 2003, Aurora, CO, October 22, 2003. [Poster]
4. Seidl AJ, Muthusamy K, Chang F, **Carollo JJ**: Evidence for the efficacy of gait analysis in surgical decision making for children with cerebral palsy. Children’s Hospital Research Institute Winter Poster Session, January, 2005. [Poster]
5. Dezman Z, Kramer C, Konieczny A, **Carollo JJ**: A method for detecting asymmetry in gait using signal analysis. Children’s Hospital Research Institute Spring Poster Session, May, 2005. [Poster]
6. Muthusamy K, Seidl AJ, Pan Z, **Carollo JJ**, and Chang FM: outcome of iliopsoas lengthening in children with cerebral palsy: evaluation of pre-operative indications. Children’s Hospital Research Institute Spring Poster Session, May, 2005. [Poster]
7. Seidl AJ, Muthusamy K, Pan Z, **Carollo JJ**, and Chang FM: Outcome of rectus femoris tranfer in children with cerebral palsy: evaluation of pre-operative indications and transfer site. Children’s Hospital Research Institute Spring Poster Session, May, 2005. [Poster]
8. Dezman, ZD, Konieczny, A, **Carollo, JJ**: Event reliability and COM-COP distances during gait initiation in children with cerebral palsy and age-matched controls. Children’s Hospital Research Institute Winter Poster Session, January, 2006. [Poster]
9. **Carollo, JJ**, Lutz, B, Valvano, J, Chang, F: Is apparent equines your Achilles heel? The role of knee extension at terminal swing.  12th Annual Meeting of the Gait and Clinical Movement Analysis Society (GCMAS), Springfield, MA. April, 2006. [Podium]
10. **Carollo, JJ**, Nicklas T, Miller, N, Chang F, & Erickson M: “Does spinal fusion for the treatment of scoliosis affect gait performance?” 2nd Musculoskeletal Research Symposium, University of Colorado, Denver, Aurora, CO, April 10, 2010. [Podium]
11. Ma J, Novais E, Ingram D, Pan Z, **Carollo J**, Chang F: Acetabular Remodeling Following Varus Derotational Osteotomy in Children with Cerebral Palsy. Children’s Hospital Colorado Research Spring Poster Session, May 17, 2013. [Poster]
12. **Carollo JJ**, Robertson D, Nicklas TS, Erickson MA: Impact of Spinal Fusion for Scoliosis Correction on Gait. Thirteenth Annual Coleman Institute National Conference, Broomfield, CO, October 2, 2013. [Poster]
13. **Carollo JJ**, Robertson D, Heyn P: Walking and its Effect on Health and Function in Individuals with Cerebral Palsy as they Transition to Adulthood: A Health Outcomes Study (NIDRR). Thirteenth Annual Coleman Institute National Conference, Broomfield, CO, October 2, 2013. [Poster]
14. Oliveira T, Heyn PC, Robertson DM, **Carollo JJ**: Incidence of Epilepsy in Adults with Cerebral Palsy: A Longitudinal Study. Rocky Mountain Regional Neuroscience Group Annual Meeting (RMRNG). May 1, 2014 [Poster Presentation]

**Outside Activities:**

Disabled Ski Instructor (Volunteer): National Sports Center for the Disabled (NSCD), Winter Park, CO

2014: Double Black Diamond Volunteer, 15 Year service award

Disabled Sailing Instructor (Volunteer): National Sports Center for the Disabled (NSCD), Winter Park, CO

US Sailing Certification: Basic Keelboat

US Sailing Certification: Basic Cruising

US Sailing Certification: Bareboat Cruising

Amateur sailboat racing since 1987 (J24, Santana 20, Soling, J22, Olson 30, Nacra 5.2, Nacra 5.8)