

RONALD F. ZERNICKE

University of Michigan



Department of Orthopaedic Surgery
School of Kinesiology
Department of Biomedical Engineering
24 Frank Lloyd Drive
Ann Arbor, MI 48105-9484

(734) 355-3486 (*OFFICE*) — (734) 929-2845 (*HOME*)

(734) 355-3486 (*MOBILE*) — (734) 929-2846 (*FAX*)

Email: zernicke@umich.edu Web page: <http://www.kines.umich.edu/directory/faculty/ron-zernicke>

Title and Contents	Page 1
Education and Training	Page 2
Academic & Administrative Appointments	Page 2
Research Interests	Page 3
Grants/Contracts	Page 3
Honors and Awards	Page 7
Memberships in Scholarly or Professional Societies	Page 8
Editorial Positions, Boards, and Peer-Review Service	Page 8
Teaching	Page 12
Committee, Organizational, and Volunteer Service	Page 15
Consulting Positions	Page 17
Visiting Professorships, Seminars, and Extramural Invited Presentations	Page 17
Patent	Page 23
Publications	Page 24
Administrative Portfolio	Page 69

RONALD FREDRICK ZERNICKE

University of Michigan

Department of Orthopaedic Surgery

School of Kinesiology

Department of Biomedical Engineering

24 Frank Lloyd Drive

Ann Arbor, MI 48105-9484

(734) 355-3486 (OFFICE) — (734) 929-2845 (HOME)

(734) 355-3486 (MOBILE) — (734) 929-2846 (HOME FAX)

Email: zernicke@umich.edu Web page: <http://www.kines.umich.edu/directory/faculty/ron-zernicke>

Education and Training

07/1970 BA (Liberal Arts) Concordia University Chicago
09/1972 MSc (Biomechanics) University of Wisconsin, Madison, Wisconsin
09/1974 PhD (Biomechanics & Anatomy) University of Wisconsin, Madison, Wisconsin

Academic and Administrative Appointments

Academic Appointments

2008-date Professor, Department of Biomedical Engineering, University of Michigan
2007-date Professor, Department of Orthopaedic Surgery, University of Michigan
2007-date Professor, School of Kinesiology, University of Michigan
2007-date Adjunct Professor, Department of Surgery and Department of Physiology and Pharmacology, Cummins School of Medicine, University of Calgary
2007-date Adjunct Professor, Faculty of Kinesiology, University of Calgary
2007-2010 Adjunct Professor, Department of Mechanical and Manufacturing Engineering, University of Calgary
2005-2007 Adjunct Professor, Dept Physical Therapy, Faculty of Rehabilitation Medicine, University of Alberta
2001-2007 Professor, Dept Mechanical and Manufacturing Engineering, Univ Calgary
1999-2007 Professor, Department of Physiology & Biophysics, University of Calgary
1997-2007 Wood Professor in Joint Injury Research, Faculty Medicine, University of Calgary
1993-2001 Adjunct Professor, Dept Mechanical and Manufacturing Eng, Univ Calgary
1992-2007 Professor, Faculty of Kinesiology, University of Calgary
1991-2007 Professor, Department of Surgery, University of Calgary
1992-2005 Adjunct Professor Department of Civil Engineering, University of Calgary
1986-1991 Professor, Department of Kinesiology, UCLA, Los Angeles, California
1980-1986 Associate Professor, Department of Kinesiology, UCLA, Los Angeles, California
1981 Visiting Associate Professor, University of Cincinnati, Department of Orthopaedic Surgery, College of Medicine and Institute for Applied Interdisciplinary Research, School of Engineering, Cincinnati, Ohio
1974-1980 Assistant Professor, Department of Kinesiology, UCLA, Los Angeles, California
1972-1974 Instructor, Department of Kinesiology, University of Wisconsin, Madison

Administrative Appointments

2017-date Co-Director, Michigan Performance Research Lab (www.mipr.kines.umich.edu)
2016-date Co-Director, U-M Exercise & Sport Science Initiative (www.essi.umich.edu)
2010-2016 Dean, School of Kinesiology, University of Michigan

2007-2009	Director, Bone & Joint Injury Prevention & Rehabilitation Center, University of Michigan
2005-2007	Executive Director, Alberta Bone and Joint Health Institute
2002-2007	Director, Alberta Provincial CIHR Training Program in Bone and Joint Health
2004-2005	Special Advisor to the President (Health and Wellness), University of Calgary
1998-2005	Dean, Faculty of Kinesiology, University of Calgary
1996-1998	AHFMR Senior Scholar, Department of Surgery, University of Calgary
1996-1999	Chair, Joint Injury and Arthritis Research Group, University of Calgary
1995-1998	Director, Office of Surgical Research, Department of Surgery, University of Calgary
1991-1996	AHFMR Scholar, Department of Surgery, University of Calgary
1989-1991	Chair, Department of Kinesiology, UCLA, Los Angeles, California
1985-1991	Director, Tissue Biomechanics Laboratory, UCLA Department of Kinesiology

Research Interests

- Functional adaptation of bone to physiological stimuli (exercise, disuse, diet, and disease)
- Joint injury and post-traumatic osteoarthritis
- Biomechanical mechanisms underlying control of normal and pathological movements

Grants/Contracts

Present and Active

- adidas™; *Human Performance and Musculoskeletal Injury Prevention*; Co-Principal Investigator; 2010-2019; \$1,826,532
- Small Company Innovation Program (Michigan Strategic Fund/Michigan Economic Development Corporation); *Validation and Application of Novel Wireless In-Sole Foot Force and Movement Device*. Co-Investigator; 2016-2018; \$21,730.
- Michigan Exercise & Sport Science Initiative; *Development of a Multilevel System-Based Model for Injury Resiliency at the Individual and Team Level in Collegiate Running Sports*; 2017-2019; \$198,149.

Summary of Major Previous Grants

- NIH; *Significance of Muscle Fiber Types*; Co-Investigator; 1977-1980; \$233,390 (PI: V. Reggie Edgerton)
- NIH NS16333; *Motor Capacity of the Chronic Spinal Cat*; Co-Investigator 1980-1983; \$162,401 (PI: Judith Smith)
- NIH NS19864; *Motor Capacity of the Chronic Spinal Cat*; Co-Investigator; 1983-1986; \$275,046 (PI: Judith Smith)
- NASA NCA-1R390-501; *Effects of Prolonged Suspension on Dense Fibrous Connective Tissue*; Co-Investigator; 1984-1987; \$140,000 (PI: Arthur Vailas)
- NASA NCA2-156; *Bone and Tendon Alterations with Prolonged Hindlimb Suspension*; Co-Investigator; 1984-1987; \$75,000 (PI: Arthur Vailas)
- Co-Principal Investigator (NASA NCA2-501), *Skeletal Effects of Seven Days of Space Flight in Space Lab 3 Rats*, 1986-1987, \$10,000 (Co-PI: Arthur Vailas)
- Department of the Navy N66001-87-C0285; *Etiology of Tibial Stress Fractures Associated with Strenuous Exercise*; Co-Investigator; 1987-1988, \$70,000 (PI: Arthur Vailas)
- NASA NAG2-47; *Soft Dense Fibrous Connective Tissue Adaptation to Prolonged Suspension*; Co-Principal Investigator; 1987-1988; \$65,288 (Co-PI: Arthur Vailas)

- NASA A53749C; *COSMOS Pilot Studies on Ground-Based Control Animal*; Co-Principal Investigator; \$5000; 1987 (Co-PI: Arthur Vailas)
- NASA; *Connective Tissue Studies in Rats Exposed to 14 Days of Space Flight, COSMOS Mission 1887*; Co-Principal Investigator; 1987-1988; \$35,000 (Co-PI: Arthur Vailas)
- NIH NS19864; *Control of Stereotypic Limb Movements*; Co-Principal Investigator; 1986-1990; \$470,708 (PI: Judith Smith)
- American Diabetes Association J890725; *Diabetic Effects on Bone and Ligament*; Principal Investigator; 1989-1990; \$27,316
- Shriners Hospitals for Crippled Children; *Below-Knee Child Amputee Gait: Dynamics of an Energy Storing Prosthesis*; Co-Principal Investigator; 1988-1991; \$122,767 (Co-PI: Yoshio Setoguchi)
- Weider Inc.; *Effects of Varied Protein Intake on Muscle and Bone Development during Exercise Training*; Principal Investigator; 1990-1991; \$24,704
- NIH HD22830-Subcontract; *Dynamical Factors in Development of Motor Skills*; Principal Investigator; 1987-1992; \$190,888
- National Collegiate Athletic Association; *Stress Fracture Risk Assessment among Elite Collegiate Women Runners*; Principal Investigator; 1990-1993; \$20,085
- Shriners Hospitals for Crippled Children; *Gait Mechanics and Energetics in Proximal Femoral Focal Deficiency*; Co-Principal Investigator; 1991-1993; \$104,052 (Co-PI: Yoshio Setoguchi)
- NIH NS19864; *Control of Stereotypic Limb Movements* Co-Principal Investigator (1990-1991) 1990-1997, \$575,055; funded with an extended budget as a *Javits Neuroscience Investigator Award* to J. L. Smith [PI]
- Alberta Heritage Foundation for Medical Research; *Functional Adaptation of Bone*; Principal Investigator; 1991-1994; \$220,000
- University of Calgary Research Grants; *Diet-Related Effects on Bone*, Principal Investigator; 1993-1995, \$8,926
- Medical Research Council of Canada; *Cryopreservation of Osteochondral Grafts for Joint Reconstruction and Repair*; Co-Principal Investigator; 1994-1997; \$420,060 (Co-PI: Norman Schachar)
- Alberta Heritage Foundation for Medical Research; *High Speed Camera System for Motion Analysis*; Principal Investigator; 1996-1997; \$100,000
- Canadian Orthopaedic Foundation; *Gait Analysis after Total Hip Arthroplasty*, Principal Investigator; 1993-1997; \$25,500
- TransCanada Pipeline Ltd.; *Children's Gait and Motion Analysis*; Principal Investigator; 1995-1998; \$15,000
- Alberta Children's Hospital Foundation; *Assessing Scoliosis with Laser Imaging and Neural Networks*; Principal Investigator; 1995-1998; \$45,000
- Alberta Children's Hospital Foundation; *Relation between Femoral Antetorsion and Patellofemoral Knee Pain*; Co-Principal Investigator; 1994-1998; \$34,000 (Co-PI: Janet Ronsky)
- National Institutes of Health; *Vasoregulation in Aged Bone*; Principal Investigator; 1997-1999; \$71,107 (US\$); [Subgrant to University of Calgary; \$16,863 (US\$)]
- Medical Research Council of Canada; *Vascular and Mechanical Responses to Joint Injury*; Co-Principal Investigator; 1994-2000; \$387,855 (Co-PI: Robert Bray)
- Whitaker Foundation; *Coordinated Graduate Programme in Biomedical Engineering for the Province of Alberta*; Principal Investigator; 1997-2000; University of Calgary; \$492,401 (US\$), (Total budget \$978,802 (US\$)); University of Alberta and University of Calgary)
- Hospital for Sick Children Foundation; *Predicting Scoliosis Progression with Laser Imaging and Neural Networks*; Principal Investigator; 1998-2000; \$129,282

- National Centres of Excellence—Canadian Arthritis Network; *Assessment of Meniscus Healing in Vivo*; Co-Investigator; 1999-2000; \$46,000 (PI: Cy Frank)
- National Centres of Excellence—Canadian Arthritis Network; *In Vivo Engineering of Ligament Scars*; Co-Investigator; 1999-2000; \$46,000 (PI: Nigel Shrive)
- Johann Jacob Foundation; *Adaptive Bone Remodelling in Young Females*; Co-Principal Investigator; 1996-2000; \$165,000 (Co-PI: Benno Nigg)
- Arthritis Society of Canada; *Predicting Scoliosis Progression with Laser Imaging and Neural Networks*; Principal Investigator; 2000-2001; \$64,641
- Medical Research Council of Canada; *Cryopreservation of Osteochondral Grafts for Joint Reconstruction and Repair*; Co-Principal Investigator; 1998-2001; \$211,383 (Co-PI: Norman Schachar)
- ATCO Ltd; *Children's Gait and Motion Analysis*; Principal Investigator; 1995-2001; \$100,000.
- National Centres of Excellence—Canadian Arthritis Network; *Gene Therapy Application to Ligament Healing*; Co-Investigator; 2000-2001; \$50,000 (PI: Cy Frank)
- Canadian Institutes for Health Research; *Vascular Adaptations in Post-Traumatic Osteoarthritis*; Co-Principal Investigator; 2000-2003; \$232,776 (Co-PI: Robert Bray)
- Canadian Natural Sciences and Engineering Research Council; Equipment Grant: *Kinetic and Kinematic Movement Analysis System*; Co-Principal Investigator; 2001-2002; \$67,340 (Co-PI: Janet Ronsky)
- Alberta Heritage Foundation for Medical Research; Equipment Grant: *Optical Surface Scanning System*; Co-Principal Investigator; 2002-2003; \$100,000 (Co-PI: Janet Ronsky)
- Alberta Children's Hospital Foundation; *Relations among Postural Control and Locomotion in Youngsters with Spastic Diplegia*; Co-Investigator; 2001-2003; \$39,751 (PI: Janet Ronsky)
- Proctor and Gamble, Inc.; *Risedronate Use in a Rabbit Model of Post-Traumatic Osteoarthritis*; Principal Investigator; 2003-2004; \$187,820
- Workmen's Compensation Board; *Quantitative Assessment of Prostheses with Traditional and CAD/CAM Sockets for Transtibial Amputees*; Co-Investigator; 1999-2004; \$109,000 (PI: Janet Ronsky)
- Canadian Institutes for Health Research; *Targeting bFGF to Bone for Systemic Stimulations of Bone Formation*; Co-Investigator; 2002-2005; \$270,000 (PI: Hasan Uludag)
- Canadian Institutes for Health Research; *Bone and Ligament Remodeling in Osteoarthritis*; Principal Investigator; 2003-2004; \$98,116
- Canadian Natural Sciences and Engineering Research Council; *Functional Adaptation of Bone*; Principal Investigator; 1994-2005; \$393,920
- Canadian Institutes for Health Research/Arthritis Society of Canada; *Predicting Scoliosis Progression with Laser Imaging and Neural Networks*; Principal Investigator; 2001-2005; \$207,900
- Canadian Institutes for Health Research; *Building a Multidisciplinary Team in Adolescent Sport Injury Prevention*; Co-Investigator; Pilot–New Emerging Team Grant; 2004-2005; \$98,805 (PI: Winne Meeuwisse)
- Canada Foundation for Innovation; *Nutrition, Genetics & Human Performance*; Co-Principal Investigator; 2001-2005; \$3,256,247 [Infrastructure] (Co-PI: Roy Gravel)
- Innovation & Science, Province of Alberta; *Nutrition, Genetics & Human Performance*; Co-Principal Investigator; 2001-2005; \$3,256,247 [Infrastructure] (Co-PI: Roy Gravel)
- Geomatics for Informed Decisions (GEOIDE) Network of Centre of Excellence; *Biometrology for Informed Decisions in Medical Diagnoses, Procedures and Treatment Evaluations*; Co-Investigator; 2002-2005; \$272,000 (PI: Janet Ronsky)

- Canada Foundation for Innovation; *Integrating Research in Osteoarthritis: From the Bedside to the Bench and Back Again*; Co-Principal Investigator; 2002-2005; \$4,303,000 [Infrastructure] (PI: David Hart)
- Canadian Institutes for Health Research; *Establishing the Foundation for a Methodology Aimed at Delivering Peptides and Proteins to Skeletal Tissues*; Co-Investigator; 2003-2005; \$100,000 (PI: Hasan Uludag)
- Canadian Institutes for Health Research; *Bone and Ligament Remodeling in Osteoarthritis*; Principal Investigator; 2003-2006; \$311,676
- Canadian Space Life Sciences Concept and Ground Studies; *Loss of Biomechanical Stimulation Leads to Alterations in Gene Expression by Cells and Tissues of the Musculoskeletal System: Implication for Atrophy Induced by Space Flight*; Co-Investigator; 2002-2006; \$150,000 (PI: David Hart)
- Hospital for Sick Children Foundation; *Reliability Study of the Non-invasive Assessment of the 3-D External Asymmetry of Patients with Idiopathic Scoliosis*; Co-Investigator; 2004-2006; \$129,680 (PI: Farida Chariet)
- Canadian Natural Sciences and Engineering Council; *Functional Adaptation of Bone*; Principal Investigator; 2005-2007; \$92,318
- Alberta Heritage Foundation for Medical Research; *Scanco MicroCT*; Co-Investigator; 2006-2007; \$100,000 [Equipment] (PI: Steven Boyd)
- Health Quality Council of Alberta; *Alberta Hip and Knee Replacement Project*; Co-Principal Investigator; 2006-2007; \$100,000 (Co-PI: Cy Frank)
- Alberta Innovation and Science; *Integrating Research in Osteoarthritis: From the Bedside to the Bench and Back Again* [Infrastructure]; Co-Principal Investigator; 2003-2008; \$4,054,176 (Co-PI: David Hart)
- Canadian Institutes for Health Research; *Predicting Scoliosis Progression with Surface Imaging and Neural Networks*; Co-Principal Investigator; 2005-2008; \$240,939 (Co-PI: Janet Ronsky)
- Canadian Institutes for Health Research; *An International Collaboration in Bone Health: A Hierarchical Analysis of Bone Architecture Across the Lifespan*; Co-Investigator; 2007-2008; \$25,000
- Canadian Natural Sciences and Engineering Research Council; *High Resolution In Vitro Micro-Computed Tomography Scanner*; Co-Investigator; 2007-2008; \$148,750 [Equipment] (PI: Steve Boyd)
- Alberta Ministry of Health & Wellness; *Alberta Provincial Bone & Joint Health*; Executive Director; 2007-2008; \$6,300,000.
- Canadian Institutes for Health Research/Alberta Heritage Foundation for Medical Research/Arthritis Society; *Alberta Provincial Training Program for Bone and Joint Health*; Program Director; 2002-2007; \$2,100,000
- Canadian Institutes for Health Research; *Targeting bFGF to Bone for Systemic Stimulation of Bone Formation*; Co-Investigator; 2005-2009; \$553,444 (PI: Hasan Uludag)
- Canadian Institutes for Health Research—Partnerships for Health System Improvement Competition; *Improving Access of Standard Care for Knee Injuries*; Co-Principal Investigator; 2006-2009; \$150,000 (Co-PI: Nicholas Mohtadi)
- The Arthritis Society of Canada; *Bone and Ligament Remodeling in Osteoarthritis*; Principal Investigator; 2006-2010; \$288,960
- Canadian Institutes for Health Research; *Stem Cells as Promoters of Skeletal Repair*; Co-Investigator; 2006-2011; \$1,485,000 (PI: Derrick Rancourt)
- Fraternal Order of Eagles, Alberta & Saskatchewan; *Scoliosis Research*; Principal Investigator; 1994-2013; \$501,000 (Co-PIs: Janet Ronsky & James Harder)

- Grand Aerie, Fraternal Order of Eagles, Lew Reed Spinal Cord Research Fund; *Scoliosis and Spinal Column Deformity Research*; Principal Investigator; 2005-2013; \$480,000
- Alberta Heritage Foundation for Medical Research; *Creating Bone and Joint Health from the Bedside to the Bench and Back Again—“Designer Therapies” to Reduce the Burden of Osteoarthritis (OA) – from Mechanisms to Prevention*; Collaborator; 2008-2013; \$5,067,103; (PI: Cy Frank)

Honors and Awards

2017-2019	Elected, Executive Board, National Academy of Kinesiology (USA)
2015	Fellow, International Society of Biomechanics
2011	Fellow, National Academy of Kinesiology (USA)
2011	Fellow, American Society of Biomechanics
2008	Doctor of Science (Honorary), University of Waterloo, Ontario, Canada
2008	Pease Family Scholar Award, Iowa State University
2008	Career Award, Canadian Society for Biomechanics/Société Canadienne de Biomécanique (North American Congress of Biomechanics)
2008	Outstanding Achievement in Graduate Supervision, University of Calgary
2007	Canadian Institutes for Health Research, CIHR Partnership Award [\$25,000] Executive Director, Alberta Bone and Joint Health Institute
2006	Fellow, Canadian Society for Biomechanics/Société Canadienne de Biomécanique
2006-2011	International Fellow, National Academy of Kinesiology (USA)
2005	Delsys Award for EMG Research Innovation, Joint Congress of International and American Societies of Biomechanics, Cleveland, Ohio
2005	Award of Excellence—Research, Faculty of Kinesiology, University of Calgary
2004	Research and Leadership Award, University of Calgary
2004	Founder’s Medal, Best Research Paper, Canadian Orthopaedics Society
2004	Community Achievement Award (Education), City of Calgary
2004-2005	President, Sigma Xi, University of Calgary
2002-2006	President/Past President, Canadian Society of Biomechanics
2002-2004	President/Past-President, Canadian Council of Physical Education and Kinesiology Administrators (38 Canadian universities)
2002	Preeminent Scholarly Publication Award, California State University Northridge (for Whiting and Zernicke, <i>Biomechanics of Musculoskeletal Injury</i> , 1998)
2001	Outstanding Research Paper, Merck-Frosst Canada Research Conference, Quebec
2000-2002	Vice President, Canadian Council of Phys Educ and Kinesiology Administrators
2000-2004	Member, Executive Board, Canadian Society of Biomechanics
1997-2002	Co-Chair, 4 th World Congress on Biomechanics
1998-date	Honourary Member, Canadian Orthopaedic Research Society
1997-1999	Co-Organizer, XVII th Congress of the International Society of Biomechanics
1997	Yasuda Award for Outstanding Research Paper, Society for Physical Regulation in Biology and Medicine
1997	Visiting Professor, Dept Biomedical Engineering, Cleveland Clinic Foundation
1995-1997	Member, Scientific Advisory Committee, XVI th Congress of International Society of Biomechanics, Tokyo, Japan
1995	R. Tait MacKenzie Award for Best Research (1 st Runner up) Canadian Academy of Sports Medicine
1994-1998	Elected Member, World Council on Biomechanics

1993-1995	President, International Society of Biomechanics
1992-1993	President, American Society of Biomechanics
1991	Alumnus of the Year, Concordia University Chicago
1987	NASA Cosmos Achievement Award, USA Nat'l Aeronautics and Space Admin
1987-1999	Member, Executive Council, International Society of Biomechanics
1987-1989	Co-Chair, XII th Congress of the International Society of Biomechanics
1983-1988	Member, U.S. National Committee on Biomechanics
1985, 1988	Biomechanics Area Representative, Annual Meeting ACSM
1985-1987	Chair, Education Committee, American Society of Biomechanics
1984	Program Chair, Annual Meeting of the American Society of Biomechanics
1983-87, 91-94	Executive Board, American Society of Biomechanics
1980-1983	Member, Research and Education Committee (Biomechanics Subcommittee) of American Society for Orthopaedic Sports Medicine
1980	University Distinguished Teaching Award, UCLA
1978-date	Fellow, American College of Sports Medicine
1970-1973	NDEA Doctoral Fellow, University of Wisconsin, Madison

Memberships in Scholarly or Professional Societies

2006-date	National Academy of Kinesiology (Fellow)
2004-date	American Society of Biomechanics (Member & Fellow)
2004-date	American Society for Bone and Mineral Research (Member)
2004-date	Biomedical Engineering Society (USA, Member)
1998-date	Canadian Orthopaedic Research Society (Honourary Member 1998–date)
1991-date	Canadian Society of Biomechanics (Member & Fellow)
1987-date	American College of Sports Medicine (Member & Fellow)
1980-date	International Society of Biomechanics (Charter Member)
1980-date	Orthopaedic Research Society (USA, Member)

Editorial Positions, Boards, and Peer-Review Service

Reviewer:	American Journal of Sports Medicine
	Annals of Biomedical Engineering
	Archives of Physial Medicine and Rehabilitation
	Bone
	British Journal of Sports Medicine
	Calcified Tissue International
	Canadian Journal of Physiology and Pharmacology
	Canadian Journal on Aging
	Clinical Journal of Sport Medicine
	Clinical Biomechanics
	Clinical Orthopaedics and Related Research
	Child Development
	Developmental Psychology
	Experimental Brain Research
	Experimental Neurology
	FASEB Journal
	IEEE Transactions on Biomedical Engineering
	International Journal of Sport Biomechanics
	Journal of Applied Biomechanics

Journal of Applied Physiology
 Journal of Biomechanics
 Journal of Biomechanical Engineering
 Journal of Bone and Mineral Research
 Journal of Bone and Joint Surgery (American)
 Journal of Experimental Biology
 Journal of Gerontology: Medical Sciences
 Journal of Gerontology: Biological Sciences
 Journal of Motor Behavior
 Journal of Neurophysiology
 Journal of Orthopaedic Research
 Journal of Rheumatology
 Journal of Sport & Health Sciences
 Kinesiology Review
 Medical Engineering and Physics
 Medical Science Monitor
 Medicine and Science in Sports and Exercise
 Muscle & Nerve
 Physiology and Behavior
 PLOS One
 Research Quarterly of Sports and Exercise
 Scandinavian Journal of Medicine and Science in Sports

Ad hoc
 Reviewer:

National Institutes of Health (1983-1985, 1987, 2008, 2009)
 American Osteopathic Association Research Bureau (1986)
 National Science Foundation (Integrative Neural Systems) (1988, 1990, 1993)
 National Science Foundation (Advanced Computational Dynamics) (2000)
 The Arthritis Society of Canada (1989)
 Medical Research Council, Canada (1989-90, 1993-95, 1997)
 Alberta Children's Hospital Foundation (1990)
 Christopher Reeve's Paralysis Foundation (2001-2002)
 Arthritis Research Campaign (United Kingdom) (2003)
 Canadian Cystic Fibrosis Foundation, Research Grants (2005)
 Canadian Institutes for Health Research (Biomedical Engineering) (2005)
 Research Grants Council of Hong Kong (2005-2010)
 Czech Science Foundation—Research Grants (Czech Republic) (2005-2006)
 Whitaker Foundation, Biomedical Engineering Grants (2004-2006)
 Canadian Institutes for Health Research (Studentships in Musculoskeletal Research)
 (2006 & 2007)
 WorkSafe British Columbia, Research Secretariat (2006)
 NSERC of Canada (1984-1985, 1989-1991, 1994, 1998, 2000, 2001, 2004–2011)
 NSERC of Canada (2006, Idea-to-Innovation Research Partnership Program)
 NSERC of Canada (2006, Collaborative Health Research Project)
 Canada Foundation for Innovation (2007 & 2011, Leaders Opportunity Fund)
 Canadian Institutes for Health Research (Catalyst Grants—Muscle & Rehab) (2008)
 European Union Research Young Investigator Award (2007)
 Canadian Society of Biomechanics (Abstract Reviewer) (2008)
 American Society of Biomechanics (Abstract Reviewer) (2009, 2015)
 International Society of Biomechanics (Abstract Reviewer) (2009)
 Canadian Institutes of Health Research, Partnership Award Committee (2009)

Orthopaedic Research Society (Abstract Reviewer) (2011, 2016-2017)
W. M. Keck Foundation (Grant Reviewer) (2015)

External
Reviewer

College of Kinesiology, University of Saskatchewan (2004)
School of Physical and Health Education, Queen's University (2005)
Department of Kinesiology, McMaster University (2005)
School of Kinesiology, University of Western Ontario (2005)
Faculty of Kinesiology and Health Studies, University of Regina (2007)
Human Health & Nutritional Sciences, University of Guelph (2007)
Department of Kinesiology, School of Public Health, University of Maryland (2012)
Exercise Biology, College of Biological Sciences, Univ. California, Davis (2013)

Boards

Editorial:

Journal of Motor Behavior (1984-1990)
Exercise and Sport Sciences Reviews (Biomechanics Editor, 1984-1997)
Journal of Biomechanics (1988-1998)
Clinical Journal of Sport Medicine (1996-2004)
British Journal of Sports Medicine (2008-2018)
Bulletin of Applied Mechanics (2010-2013)
Kinesiology Review (2011-2018)

Member:

Research Grants Panel (Chair–Bone, Joint & Cartilage Panel, 1996-1997)
The Arthritis Society of Canada (1992-1995; 1996-1997)
Medical Planning Committee, Arthritis Society of Canada (1996-1997)
Research Advisory Committee, Arthritis Society of Canada (1996-1999)
Nominating Committee, Arthritis Society of Canada (1996-1997)
Scientific Advisory Committee, Whitaker Foundation (1994-2003)
Post-Doctoral Fellowship Advisory Committee (Chair, 1995-1998), Alberta Heritage
Foundation for Medical Research
Medical Research Council, Biomedical Engineering Committee (1999-2000)
Canadian Institutes for Health Research, Biomedical Eng Comm (2000-2002)
Alberta Heritage Fdn for Med Res, Program Advisory Committee (2002-2004)
Board of Directors, Western Orthopaedic and Arthritis Res Foundation (1998-2004)
Canadian Arthritis Network (National Centres of Excellence) (2000-2009)
Board of Directors, Alberta Bone and Joint Health Program (2003-2005)
Research Advisory Committee, Alliance for Canadian Arthritis Program (2003-2007)
Scientific Advisory Board, Singapore Fitness Professionals Fed (2003-2007)
International Scientific Advisory Committee, 6th International Workshop on Fluid Flow
in Bone, Seattle, WA (2004)
Research Advisory Committee, Alberta Centre for Active Living (2000-2005)
International Reviewer Panel, *Medical Science Monitor* (2005-2007)
Provincial Board of Directors (Ex Officio), Alberta Bone and Joint Health Institute
(2005-2007)
Data & Safety Monitoring Board, Harvard University and University of Maryland, NIH
Project on Osteoporosis (2006-2013)
Executive Committee, Alberta Bone and Joint Health Institute (2005-2007)
Management Committee, Alberta Bone and Joint Health Institute (2005-2007)
Alberta Provincial Arthroplasty Working Committee (2005-2006)
Alberta Provincial Wait Times Management Steering Committee (2006-2007)

Alberta Provincial Bone and Joint Advisory Committee (2006-2007)
 Steering Committee, Centre for Innovation in Health Technology (2006-2007)
 Laboratory Alberta, Health Innovation Steering Committee (2006-2007)
 International Program Committee, IASTED International Conference on Biomechanics, BioMech 2007 (2006-2007)
 Alberta Bone & Joint Physician Advisory Committee (Ex Officio) (2006-2007)
 American Society of Biomechanics, Borelli Award Committee (2008)
 American Society of Biomechanics, James Hay Award Committee (2009)
 International Advisory Board, Alberta Bone and Joint Health Institute (2007-2010)
 NASA Human Research Program's Bone & Muscle Risk Standing Review Panel (2009-2013)
 External Advisory Committee, Cleveland Clinic Foundation, Department of Biomedical Engineering (1996-2010)
 External Advisory Committee, State University of New York, Stony Brook, Department of Biomedical Engineering (2001-2010)
 External Advisory Committee, Dept of Physical Medicine and Rehabilitation, University of Virginia (2002-2009)
 External Advisory Committee, School of Applied Physiology, Georgia Institute of Technology (2008-2018)
 Programme Committee NSERC CREATE Training Programme (University of Calgary, 2009-2013)
 External Advisory Board, Centre for Mobility and Health (University of British Columbia 2009-2017)
 Program Advisory Committee, Joint Motion Training Program (University of Western Ontario, 2010-2018)
 College of Reviewers for the Canada Research Chairs Program (2010-2017)
 American Society of Biomechanics, Borelli Award Committee (2012); Clinical Biomechanics Award Committee (2013); Fellowship Committee & Abstract Reviewer (2015-2018)
 International Society of Biomechanics, Fellowship Review Committee (2015-2020)
 International Advisory Board, Alberta Osteoarthritis Program (2012-2017)
 National Academy of Kinesiology, Committee on Membership (2012-2017); Executive Board (Member-at-Large) (2017-2019)
 Orthopaedic Research Society, Abstract Reviewer (2015-2018)
 Research and Business Advisory Committee, Western's Bone & Joint Institute (Western University, London, ON) (2017-2019)
 Member, Organizing Committee, 2018 World Congress of Rheumatology and Orthopaedics, Madrid, Spain (2017-2018)
 Member, Scientific Advisory Committee, International Society of Biomechanics, 2021 ISB Congress, Seoul, South Korea (2018-2021)

- Chair: Canadian Institutes for Health Research, Movement & Exercise Committee (2002-2005, 2007)
- Chair: CIHR and Canadian Space Agency, Microgravity & Bone Cells Committee (2005)
- Chair: International Scientific Committee, International Space Life Sciences Working Group & International Osteoporosis Federation Congress, Space-Bone Workshop & Symposium (2005-2006)

Teaching

Name	University/Dept	Degree	Date	Position
Gayfield, T.	U-Michigan/Kines	MS	2017	Strength & Conditioning, Mich Athletics
Burns, G.	U-Michigan/Kines	PhD	2016-	Current PhD student (BS/MS BME)
*Lorincz, C.	Calgary/Kines	MD/PhD	2012	Physician, Emerg Med, Univ Calgary
*Manske, S.	Calgary/Kines	PhD	2010	Asst Professor, Univ Calgary, Dept Radiology
*MacKay, C.	Calgary/Med Sci	PhD	2010	Bioengineer, Medtronics, Edmonton, Alberta
Gooch, K.	Curtin/Public Health,	PhD	2010	Health Services Res; Baxter Pharmaceuticals
*Goulet, G.	Calgary/ Mech Eng	PhD	2009	Research Director, Xenith Tech, Detroit, MI
*Tapper, J.	Calgary/Mech Eng	MD/PhD	2009	Physician, Univ Calgary
*Fried, A.	Calgary/ Mech Eng	MSc	2008	Business owner & entrepreneur, Calgary
*Schneider, P.	Calgary/Kines	MD/PhD	2008	Asst Prof, Dept Surgery, Univ Calgary
Steiner, D.	Calgary/Medicine,	MBT	2007	Physician, Univ British Columbia
*LaMothe, J.	Calgary/Kines	MD/PhD	2007	Assistant Professor, Univ Calgary, Dept Surgery
*Monteleone, B.	Calgary/Kines	MD/PhD	2006	Sport Med Physician, Kelowna BC
Croft, J.	Calgary/Med Sci	PhD	2006	Assistant Professor, New Zealand
Robu, D.	Calgary/Mech Eng	MSc	2006	Researcher, Calgary Health Region
*Grant, J.	Calgary/Kines	MD/PhD	2005	Asst Professor, Dept Orthop Surg, Univ Michigan
*Sran, M.	UBC/Rehab Sci	PhD	2005	Post-Doctoral Fellow, Simon Fraser University
*Hamilton, N.	Calgary/Mech Eng	MSc	2004	MD, University of Laval
*Doschak, M	Calgary/Med Sci	PhD	2004	Associate Professor, University of Alberta
Alvarez, M.	Calgary/Kines	MSc	2003	Graduate Student, BC Institute of Technology
*Gildenhuys, A.	Calgary/Mech Eng	MSc	2003	Bioengineer, DynaSystems, Alberta
Pardy, C.	Calgary/Kines	MSc	2003	Prosthetist-Orthotist, Calgary, Alberta
Wohl, G	Calgary/Mech Eng	PhD	2002	Associate Professor, Mech Eng, McMaster Univ
McGuinness, B.	Calgary/Med Sci	MSc	2002	HS Science Teacher, Ontario
*Jaremko, J.	Calgary/Med Sci	MD/PhD	2002	Assoc Professor, Radiology, Univ of Alberta
*Boyd, S.	Calgary/Mech Eng	PhD	2001	Endowed Prof, Med/Mech Eng, Univ Calgary
Chan, R.	Calgary/Mech Eng	MSc	2000	PhD, University of London, UK
Davies, C.	Calgary/Mech Eng	MSc	2000	PhD/University of Waterloo
*Judex, S.	Calgary/Mech Eng	PhD	1999	Professor, SUNY Stony Brook
Ajemian, S.	Calgary/Med Sci	MSc	1998	Biomedical Engineer, California
Wohl, G.	Calgary/Mech Eng	MSc	1996	Associate Professor, McMaster University
Ferguson, K.	Calgary/Comp Sci	PhD	1996	Software Engineer, California
Kerrigan, D. C.	UCLA/Kines	MD/MSc	1992	Professor & Chief Rehab Med, Univ of Virginia
Li, K-C.	UCLA/Kines	MD/PhD	1991	Orthop Surgeon-Scientist, Taiwan, ROC
Hou, J.	UCLA/Kines	MD/PhD	1990	Orthop Surgeon-Scientist, Taiwan, ROC
Loitz, B.	UCLA/Kines	PhD	1990	Asst Research Professor, University of Calgary
Salem, G.	UCLA/Kines	PhD	1989	Professor, Univ Southern California
Wisleder, D.	UCLA/Kines	MSc	1989	PhD, Penn State University
Hart, T.	UCLA/Kines	PhD	1988	Vice President, Mattel Corp, Los Angeles
Shaw, S.	UCLA/Kines	MD/PhD	1987	Orthopaedic Surgeon, New York
Gourde, T.	UCLA/Kines	MSc	1987	MD/Medical Student
Peller, D.	UCLA/Kines	MSc	1986	Engineer, TRW, Redondo Beach
Matsuda, J.,	UCLA/Kines	MSc	1985	MD University of Iowa
Gross (Hoy), M.	UCLA/Kines	PhD	1984	Associate Professor, University of Michigan
Stewart, H.	UCLA/Kines	MSc	1983	Engineer, TRW, Redondo Beach
Roberts, D.	UCLA/Kines	MSc	1983	MD Harvard University
Keller-Brewer, D.	UCLA/Kines	MSc	1982	Teacher, Los Angeles

Jepsen, R.	UCLA/Kines	MSc	1982	Teacher, Los Angeles
Perry, J.	UCLA/Kines	MSc	1981	Teacher, Los Angeles
Garhammer, J.	UCLA/Kines	PhD	1980	Professor, California State Univ Long Beach
Hoy, M.	UCLA/Kines	MSc	1979	Associate Professor, University of Michigan
Whiting, W.	UCLA/Kines	MSc	1979	Professor, California State Univ Northridge
Clark, L.	UCLA/Kines	MSc	1978	Physical Therapist, Los Angeles
Sprong, S.	UCLA/Kines	MSc	1975	Teacher, Los Angeles
Verderber, J.	UCLA/Kines	MSc	1975	Teacher, Los Angeles
Hafer, J.	U-Mich/Kines	PDF	17-19	Current Post Doctoral Fellow
**Agresta, C.	U-Mich/Kines	PDF	15-18	Asst Res Scientist, University of Michigan
Denoweth, J.	U-Mich/Kines	PDF	13-15	Principal, Zendler Scientific, Tacoma, WA
Whiteside, D.	U-Mich/Kines	PDF	13-15	Sport Sci/Biomechanist, New York Yankees
**Cole, J.	U-Mich/Orthop Surg	PDF	10-13	Assistant Professor, Mech Eng, NCSU-UNC
Goulet, G.	U-Mich/Kines	PDF	09-12	Director of Research, Xenith Tech, Detroit
Brown, T.	U-Mich/Kines	PDF	11-12	Researcher, US Army Med Res Center, Mass.
**Kipp, K.	U-Mich/PM&R	PDF	09-11	Assistant Professor, Marquette University
*Cooper, D.	Calgary/Med	PDF	05-06	Assistant Professor, University of Saskatchewan
Doschak, M.	Calgary/Med Sci	PDF	2005	Associate Professor, University of Alberta
Poncet, P.	Calgary/Surgery	PDF	01-05	Bioengineer, Calgary, Alberta
*Judex, S.	Calgary/Surgery	PDF	1999	Professor, SUNY Stony Brook
*Muldrew, K.	Calgary/Surgery	PDF	96-98	Assistant Professor, University of Calgary
Ogawa, T.	Calgary/Surgery	PDF	96-97	Assistant Professor, South Korea
*Gross, T.	Calgary/Surgery	PDF	93-95	Professor, Dept Orthopaedics & Sports Med, University of Washington

*At the *University of Calgary* – Recipient of national (NSERC or CIHR), provincial (AHFMR), or U of Calgary scholarship funding.

**At the *University of Michigan* – Recipient of national (e.g., NIH) or University scholarship funding.

Each year, at the University of Calgary, I served on other supervisory committees for 8-10 MSc and PhD students in the Departments of Mechanical & Manufacturing Engineering, Kinesiology, and Medical Sciences, and supervised 2-3 undergraduate summer research students and 1–2 orthopaedic residents.

Trainee Awards for Excellence (Selected):

PhD student Stefan Judex—Young Investigator Award, Canadian Society of Biomechanics; Young Investigator Award, International Society of Biomechanics (1993)

PDF Ted Gross—Young Investigator Award, American Society of Biomechanics (1993)

PhD student Steve Boyd—International Society of Biomechanics Dissertation/Research Award (1999) and International Society of Biomechanics Young Investigator Award (2001); Canadian Biomedical Engineering Society Best Student Research Paper (1998)

Preceptor for U of C Medical Students (Maya Spaeth and Nili Katz)—Peter Cruse Award for Best Surgery-Related Research Paper, Faculty of Medicine (1999)

PhD student Greg Wohl—Outstanding Research Paper Award at the 2000 Alberta Biomedical Engineering Conference

PhD student Michael Doschak—Outstanding Research Award at the 2001 Merck-Frosst Research Conference, Kirkland, Quebec; World Congress on Osteoarthritis Travel Award, Germany (2003)

MD/PhD student Jacob Jaremko (2001) Dr. Lionel McLeod Health Research Scholar (AHFMR)

MSc student Prism Schneider—International Society of Biomechanics Congress Travel Award (2003)

PhD student Jeremy LaMothe—International Society of Biomechanics Congress Travel Award (2003), 5th International Bone Fluid Flow Conference Travel Award (2003); Canadian Connective Tissue

Conference Travel Award (2003); Nickle Foundation Prize (Top entering medical student, Univ. Calgary, 2003)

PDF Philippe Poncet—Canadian GEOIDE National Centre of Excellence, Annual Meeting, 1st Prize for Research (2003)

MD/PhD student Jeremy LaMothe—International Society of Biomechanics, Young Investigator Award (2003)

MD/PhD student Janet Tapper—ASME Summer Bioengineering Conference (USA), Young Investigator Award (2003); Orthopaedic Research Society, New Investigator Recognition Award (2004)

MD/PhD student John Grant—Peter Cruse Award for Best Surgery-Related Research Paper, Faculty of Medicine (2004) and Young Investigator Award, Canadian Society for Clinical Investigation (2004)

PhD student Caeley Lorincz—Gold Medal (Faculty of Kinesiology) and Undergraduate Canadian Society of Exercise Physiology Award (2004)

MSc student Nicolas Hamilton—Finalist, New Investigator Award (MSc), Canadian Society of Biomech (2004); 6th International Bone Fluid Flow Conference Travel Award (2004)

MSc student Christopher MacKay—Finalist, New Investigator Award (MSc), Canadian Society of Biomech (2004)

PhD/MD student Jeremy LaMothe—Founder's Medal (Best Research Paper), Canadian Orthopaedic Research Society Meeting (2004); New Investigator Research Award, Combined Conference of the Orthopaedic Research Societies (USA, Canada, Japan, and Europe) (2004); J. B. Hyne Research Innovation Award (University of Calgary, 2004)

PhD/MD student Prism Schneider—Delsys Award for EMG Research Innovation, Joint Congress of International and American Societies of Biomechanics, Cleveland, Ohio (2005); Best Research (Poster) Canadian Society for Clinical Investigation, Vancouver, British Columbia (2005)

PhD/MD student Jeremy LaMothe—Best Research Award (Poster), Alberta Provincial Training Program in Bone & Joint Health Annual Conference, Banff, Alberta (2005); Lydia Sikora Medical Research Award; University of Calgary Faculty of Medicine (2005 & 2006)

PhD student Grant Goulet—Best Presentation Award, University of Calgary, Schulich School of Engineering, Graduate Student Research Symposium (2006); NDI New Investigator Award, Canadian Society of Biomechanics (2006)

PhD student Sarah Manske—Ralph Steinhauer Award of Distinction, Province of Alberta (2007); Killam Honourary Scholarship (2007); University of Calgary Faculty of Graduate Studies Dean's Research Excellence Award (2007)

MSc student Aviv Fried—International Society of Biomechanics Congress Travel Award (2007)

PhD/MD student Prism Schneider—Peter Cruse Award for Best Surgery-Related Research Paper (Honorable Mention), Faculty of Medicine, University of Calgary (2007)

PhD/MD student Caeley Lorincz—Markin Graduate Scholar; University of Calgary (2009), Finalist Young Investigator Award, International Society of Biomechanics, Capetown, South Africa (2009)

PhD student Sarah Manske—Natural Sciences and Engineering Research Council of Canada, Research Achievement Award (2009)

PhD student Sarah Manske—NDI New Investigator Award (PhD), Canadian Society of Biomechanics (2010)

PhD student Sarah Manske—Harold Frost Young Investigator Award, Sun Valley Bone Conference (2011)

PhD student Geoff Burns—American Society of Biomechanics, Conference Travel Award (2017)

TEACHING (*UCLA*)

- Human Neuromuscular Anatomy
- Human Dissection Anatomy
- Biomechanics of Human Movement
- Biomechanics of Musculoskeletal Injury
- Electromyographic Assessment of Movement
- Musculoskeletal Mechanics
- Physiology and Mechanics of Connective Tissues

TEACHING (*University of Calgary and University of Alberta*)

- Biomechanics of Bone (Mechanical Engineering)
- Topics in Joint Injury & Arthritis—Biology & Biomechanics (Medical Science)
- Control of Posture and Movement (Medical Science)
- Normal and Pathological Gait (Medical Science)
- Seminars in Biomedical Engineering (University of Calgary & University of Alberta)
- Transdisciplinary Bone and Joint Health (Univ Calgary & Univ Alberta)
- Seminar in Bone and Joint Health (University of Calgary & University of Alberta)

Committee, Organizational, and Volunteer Service

Institutional

UCLA

- Life Sciences Advisory Committee, USPHS Biomed Res Grant (1981-83 & 1985-89)
- Academic Senate Legislative Assembly (1981-1982)
- University Committee on Undergraduate Courses and Curricula (1982-1985)
- University Committee on Teaching (1985-1988)
- University Graduate Council—Review of Department of Pathology (1988)
- Chancellor's Committee to Evaluate the Dean of Life Sciences (1985-1986)
- Academic Advisory Committee, Chemistry/Biological Sciences Renovation (1987-1989)
- Advisory Committee, Dental Research Institute (1987-1991)
- Advisory Committee, Sports Med and Dept of Intercollegiate Athletics (1989-91)
- Executive Committee, Southern California Injury Prev and Res Center (1989-92)
- Selection Committee, Alumni Assoc, UCLA Outstanding Senior (1981)
- Selection Committee, Alumni Association, Community Service Awards (1982)

University of Calgary

- Chair, Coordinating Committee on Biomedical Engineering (1997-1998)
- Chair, Joint Injury and Arthritis Research Group (1996-1998)
- Member, Joint Injury and Arthritis Research Group (1991-date)
- Member, Julia McFarlane Diabetes Research Centre (1992-1995)
- Chair, Department of Surgery Research Committee (1992-1997)
- Member, Pediatric Orthopaedic Research Group (2000-date)
- Director, Office of Surgical Research, Department of Surgery (1995-1998)
- Member, Division Heads/Division Chiefs, Department of Surgery (1995-1998)
- Member, Division of Orthopaedic Surgery, Research Committee (1993-1998)
- Member, Division of Orthopaedic Surgery, Finance Committee (1993-1998)
- Member, General Faculties Council (1993-1997, 1998-2003)

Member, University Admissions, Promotions & Dismissal Committee (1993-1996)
 Member, Animal Care Policy Committee—Health Sciences (1993-1996)
 Member, University Dismissal Hearing Panel (1994-1998)
 Member, Search Committee for Assoc Vice-Pres (Research)/Dean, Faculty of Graduate Studies (1996)
 Member, Search Committee, Division of Orthopaedics, Department of Surgery (1996)
 Chair, Search Committee for Connective Tissue Histomorphometrist, Dept of Anatomy (1994)
 Chair, Search Committee, Department of Biochemistry and Molecular Biology (1998)
 Member, Review/Search Committee for Carma Chair, Faculty of Management, Univ of Calgary (1996)
 Member, Search Committee for Department of Community Health Sciences (1996)
 Member, Search Committee, Department of Civil Engineering, University of Calgary (1996)
 Member, Search Committee, Department of Electrical and Computer Engineering (1997)
 Member, Search Committee, Department of Clinical Neurosciences (1997)
 Member, Search Committee, Department of Mechanical and Manufacturing Engineering (1998)
 Member, UC Strategic Transformation Team for Research and Graduate Studies (1997-1998)
 Member, Faculty of Medicine, Recruitment Priorities Committee (1997-1998)
 Member, Surgical Executive Committee, Department of Surgery and Calgary Regional Health Authority (1996-1998)
 Member, Executive Board, Calgary Olympic Development Association (1998-2003)
 Chair, Health and Education Deans' Cluster (Education, Medicine, Nursing, Kinesiology) (1999-2000)
 Member, Deans' Council Executive Committee (2000-2003)
 Chair, Deans' Council Executive Committee (2001-2002)
 Member, Deans' Council Alcohol Advisory Committee (2000-2002)
 Member, University Task Force on the Changing Nature of Academic Work (2000)
 Member, University Task Force on Faculty Recruitment and Retention (2000)
 Member, University Task Force on Trust Employees (2001-2002)
 Member, University InfoStructure Advisory Group (2001-2002)
 Member, University Committee for Alberta Ingenuity Foundation Centres of Excellence (2001)
 Member, University Revenue Generation Action Group (2002-2003)
 Member, Killam Memorial Chair Review Committee (2003)
 Member, Communications Committee (*Advances in Motion*), Joint Injury and Arthritis Research Group (2000-2005)
 Member, Advisory/Scholarship Committee, Undergraduate Student Research Program (2004-2006)
 Member, Bioengineering Advisory Committee (2004-2006)
 Chair, Advisory Board, Markin Institute for Public Health (2004-2005)
 Member, University of Calgary West Campus Development Task Force (2005)
 Member, Fundraising Vetting Committee, REACH Fundraising Initiative of the University of Calgary and Calgary Health Region (2005)
 Advisory Selection Committee (Designate of Vice President Research and International), Alvin Libin Chair in Biomedical Engineering, Schulich School of Engineering (2005-2006)
 Chair, Academic Search and Selection Committee, Canada Research Chair (Tier II) in Health Systems and Services Research, Faculty of Medicine (2006)
 Member, Faculty of Kinesiology, Research Policy Committee (2006-2008)
 Member, Academic Search and Selection Committee, Biomechanics/Bioengineering Position, Faculty of Kinesiology & Schulich School of Engineering (2007)

University of Michigan

Member, Research Advisory Committee, Department of Orthopaedic Surgery (2007-2012)
 Member, Search Committee, Bone & Joint Injury Prevention & Rehabilitation Center, Director (2009-2010)

Member, Search Committee, Department of Orthopaedic Surgery, Musculoskeletal Epidemiologist (2009-2010)

Member, Academic Programs Group, Development Subcommittee (2010-2011, 2012-2014)

Member, Academic Programs Group, Operations Subcommittee (2010-2012)

Member, Academic Programs Group, Diversity Subcommittee (2014-2015)

Member, Academic Programs Group, Budget Subcommittee (2012-2016)

Member, Academic Programs Group, School for Deans Committee (2013-2014)

Co-Chair, Executive Committee, Bone & Joint Injury Prevention & Rehabilitation Center (2010-2015)

Member, Internal Advisory Board, Michigan Institute for Clinical and Health Research (2011-2016)

Member, University Advisory Board, MHealthy Program (2012-2016)

Volunteer Service (Community)

Chair, United Way of Calgary & Area Campaign Cabinet, Education Division (2001 and 2002)

Member, Community and Partners Advisory Committee, Libin Cardiovascular Institute of Alberta (2003-2007)

Consulting Positions

AAU Sports Medicine Committee (1977-1979);

US Olympic Committee (1975-1976)

Spain, Ministry of Culture–Sports Medicine (1980)

Failure Analysis Associates, Inc., Los Angeles (1975-1982)

Forensic Science Associates, Los Angeles (1981-1983)

Association of Scientific Advisors, Los Angeles (1979-1982)

UCLA Child Amputee Prosthetics Project (1978-1994)

BIOMLIB Software (Austria 1982-1987)

Meduski Research Corporation, Los Angeles (1991-1992)

Canadian National Sports Development Centre, Calgary (1994-1995)

Fraser, Milner & Casgrain, Calgary, Alberta, (2000)

Visiting Professorships, Seminars, and Extramural Invited Presentations (Selected)

NASA/Ames & UC Davis Symposium on the Physiological and Mechanical Responses of Bone to Weightlessness, NASA/Ames, Moffett Field, CA, October 1986: *Biomechanical and morphological response of Spacelab-3 tibiae and humeri to weightlessness.*

Engineering Foundation—Conference on Biomechanics and Control, Henniker, New Hampshire, July 1987: *Role of intersegmental dynamics in the control of rapid limb oscillations.*

Alberta Heritage Foundation for Medical Research Visiting Lecturer, Faculty of Physical Education, Human Performance Laboratory, University of Calgary, Calgary, Alberta, Canada, October 1987: *The control of rapid limb movements & The response of fibrocartilage and bone to altered mechanical stress.*

Department of Biomedical Engineering, University of Southern California, Los Angeles, California, February 1988: *Dynamical control of limb trajectories.*

Department of Aerospace Engineering and Engineering Mechanics, Department of Mechanical Engineering, and the Institute for Applied Interdisciplinary Research, University of Cincinnati, Cincinnati, Ohio, April 1988: *The role of intersegmental dynamics in the control of limb trajectories.*

North American Society for Psychology of Sport and Physical Activity Annual Meeting, Knoxville, Tennessee, June 1988: *Intersegmental dynamics: New dimensions in motor development.*

Center for Locomotion Studies, The Pennsylvania State University, State College, Pennsylvania, September 1988: *The role of intersegmental dynamics in the control of limb trajectories.*

Department of Exercise and Sport Sciences, Arizona State University, Tempe, Arizona, November 1988: *Control of inertial and muscular torques during coordinated limb movements.*

Department of Exercise and Sport Sciences, The Pennsylvania State University, State College, Pennsylvania, February 1989: *The dynamics of motor control and connective tissue adaptation.*

Department of Neurosurgery, UCLA School of Medicine Symposium on Acquired Lumbar Spinal Stenosis, Los Angeles, California, March 1989: *Ligament properties and relation to lumbar spinal stenosis.*

American Orthopaedic Society for Sports Medicine and National Institutes of Health, Bethesda, Maryland, May 1989: *Mechanisms of overload injuries: Dynamical loading of the musculoskeletal system in training and conditioning.*

Department of Surgery, University of Calgary, Alberta, Canada, March 1990: *Osteoregulatory function of bone strain.*

Department of Surgery, Joint Injury and Diseases Research Group, University of Calgary, Alberta, Canada, June 1990: *Adaptive responses of bone and ligament to diet, exercise, and diabetes.*

American College of Sports Medicine, Southwest Chapter Annual Meeting, San Diego, California, November 1990: *Adaptation of immature and mature bone to strenuous exercise.*

Julia McFarlane Diabetes Research Centre and Endocrine Research Group, University of Calgary, Faculty of Medicine, April 1992: *The effects of diabetes and exercise on bone and ligament.*

Engineering Foundation Conference on Biomechanics and Neuroscience, Ventura, CA, July 1992: *Intersegmental dynamics and motor control of human limb movements.*

Western Canadian Prosthetics Symposium, Alberta Children's Hospital, Calgary, Alberta, October, 1992: *Static and dynamic alignment of the prosthesis and the effect on gait.*

Department of Medicine, Grand Rounds, University of Calgary, Calgary, Alberta, November 1992: *Connective tissue physiology, mechanics, and injuries.*

Alberta Neuroscience Association, Kananaskis Centre, Kananaskis, Alberta, November 1992: *Changes in limb dynamics in the first year of life.*

Visiting Professor, Republic of China, Sports Medicine Society, Taipei, Taiwan, December 1992: Four invited lectures— (1) *The response of bone to exercise*, (2) *locomotion and sports for amputees*, (3) *Overtraining injuries and stress fractures*, (4) *role of dynamics in the learning of motor skills.*

University of Alberta, Department of Physical Therapy and Neuroscience Program, March 1993 (Two Lectures): (1) *Role of intersegmental dynamics in adult and infant motor skill acquisition*, and (2) *Locomotion and prosthesis ergonomics in lower extremity amputees.*

Columbia University, New York, Keynote Lecture, Conference on Skill Acquisition: Implications of Research and Theory in Motor Learning: April 1993: *The role of intersegmental dynamics in adult and infant motor skill acquisition.*

Université du Québec à Montréal, Montréal, Québec, Département de kinanthropologie, February 1994: *Intersegmental dynamics and motor skill acquisition.*

Canadian Society of Biomechanics, 8th Biennial Conference, Calgary, Alberta, Invited lecture, August 1994: *Assessing outcome efficacy in child amputee locomotion.*

Annual Meeting of the Southeast American College of Sports Medicine, Lexington, Kentucky, Keynote Lecture, February 1995: *The response of bone to exercise and diet.*

XVth Congress of the International Society of Biomechanics, Jyväskylä, Finland, Presidential Keynote Lecture, July 1995: *Functional adaptation of bone to physiological and mechanical stimuli.*

American Physical Therapy Association Research Symposium, Multisegmental Motor Control: Interface of Biomechanical, Neural and Behavioral Approaches. Invited Lecture, New Hampton, New Hampshire, August 1995: *Biomechanics and motor control in orthopaedic related pathologies.*

American Physical Therapy Association Scientific Meeting and Exposition, Minneapolis, Minnesota, Invited Lecture, June 1996: *Biomechanics and motor control in orthopaedic related pathologies*.

Cleveland Clinic Foundation, Department of Biomedical Engineering, Cleveland, Ohio, Invited Lecture, May 1997: *Response of bone to physiological stimuli*.

Canadian Orthopaedic Association Annual Meeting, Invited Lecture, Hamilton, Ontario, June, 1997: *Biomechanics and osteoporosis*.

Whitaker Foundation Research Conference, Keynote Lecture, Snowbird, Utah, July 1997: *Biomedical engineering and orthopaedic clinical care*.

Southwest Chapter of the American College of Sports Medicine, Invited Lecture, Las Vegas, Nevada, November, 1997: *Musculoskeletal injuries to the knee and leg*.

Department of Kinesiology, University of Waterloo, Waterloo, Ontario, Invited Lecture, February, 1998: *Orthopaedic biomechanics: Function, diagnosis, and mechanisms*.

CORS Presidential Guest Lecture, Canadian Orthopaedic Research Society, Ottawa, Ontario, June 1998: *Functional adaptation of bone*.

Canadian Medical and Biological Engineering Society, Invited Lecture, Edmonton, Alberta, June, 1998: *Cryopreservation of osteochondral tissues for joint replacement and repair*.

Alberta Society for Motor Control, Keynote Lecture, Jasper, Alberta, October, 1998: *Biomechanics and motor control*.

Marquette University, Visiting Professor Lecture, Department of Biomedical Engineering, Milwaukee, WI, February, 1999: *Functional adaptation of bone*.

University of California, Davis. Departments of Orthopaedics and Exercise Science and Biomedical Engineering Program, Invited Lecture, Davis, CA, February, 1999: *Functional adaptation of bone*.

Canadian Orthopaedic Nursing Association Annual Meeting, Keynote Lecture, Calgary, AB, October 1999: *Functional adaptation of bone*.

The Arthritis Society, Keynote Lecture, Research and Public Symposium, October, 1999: *Osteoarthritis—treatments and new directions*.

McMurtry Lecturer (Invited Keynote Lecture), Surgeons' Day, University of Calgary, Calgary, AB, June 2000: *Orthopaedic surgery research*.

Canadian Society of Biomechanics, Keynote Lecture, Montreal, PQ, August 2000: *Factors in skeletal adaptation*.

IOC Pre-Olympic Scientific Congress, Keynote Lecture, Brisbane, Australia, September 2000: *Functional adaptation of bone*.

Sigma Xi Research Society, University of Calgary, Invited Lecture, November 2000: *Osteoarthritis and joint mechanics and physiology*.

Biomedical Engineering Society—Republic of China, Keynote Lecture, Taipei, Taiwan, December 2000: *Responses of bone to exercise and injury*.

3rd Annual Orthopaedic Research Symposium, Invited Lecture, University of Calgary, Department of Surgery (Division of Orthopaedics), February 2001, *Periarticular bone adaptations in post-traumatic osteoarthritis*.

4th Combined Meeting of the Orthopaedic Research Societies of USA, Canada, Japan, Europe, Keynote Lecture, Rhodes, Greece, June 2001: *Adaptation of bone to exercise and injury*.

International Conference on Biomechanics and Annual Meeting of the Taiwan Society of Biomechanics, Keynote Lecture, Taipei, Taiwan—Republic of China, November 2001: *Bone responses to exercise and injury*.

40th Anniversary Research Symposium, National Cheng-Kung University, Institute for Biomedical Engineering, Keynote Lecture, Tainan, Taiwan–Republic of China, November 2001: *Bioengineering advances in orthopaedics*.

Shanghai Second Medical School, The Ninth People's Hospital, Department of Orthopaedics, Invited Lecture, Shanghai, China, November 2001: *Bioengineering advances in orthopaedics*.

American Society for Nutrition Sciences Symposium, Experimental Biology 2002 Conference, Symposium Invited Keynote Lecture, New Orleans, Louisiana, April 2002: *Effects of dietary fat in bone adaptation*.

Alberta Health Industry Alliance, Invited Lecture, Calgary, Alberta, June 2002: *Health and wellness — Vision for southern Alberta*.

Center for Complex Systems and Brain Science, Florida Atlantic University, Boca Raton, Florida, August 2002: *Bioengineering systems and orthopaedic biomechanics*.

International Biomechanics Congress—Biomechanics of Man, Invited Keynote Lecture, Prague, Czech Republic, November 2002: *Response of bone to exercise and injury*.

Canadian Institutes for Health Research—Institute for Musculoskeletal Health and Arthritis National Symposium, Invited Lecture, January 2003: *Integrating bone and joint health research and training*.

Lawson Health Research Institute, University of Western Ontario, Sister Mary Doyle Research Symposium, Invited Keynote Lecture, March 2003: *Bone adaptation and orthopaedic biomechanics*.

CCAT/BioAlberta—Opportunities in Bioinformatics: Technology, Partnerships and Commercialization, Invited Lecture, March 2003: *Innovations in bone modelling*.

Alberta Provincial CIHR Bone and Joint Training Program (University of Calgary and University of Alberta), Seminar, March 2003: *Adaptation of bone to exercise and injury*.

American College of Sports Medicine, Annual Meeting, Symposium Invited Lecture, San Francisco, California, June 2003: *The bone-injury connection*.

Congress of the European College of Sport Sciences, Symposium on Neuromuscular & Skeletal Adaptation, Invited Lecture, Salzburg, Austria, July 2003: *Adaptation of bone to exercise and injury*.

Whitaker Conference on Biomedical Engineering, La Jolla, California, Workshop Invited Speaker, August 2003: *Strategies for Research: Individual vs. Team—How best to succeed*.

Department of Biomedical Engineering, State University of New York, Stony Brook, Invited Lecture, September 2003: *Adaptation of bone to exercise and injury*.

Departments of Orthopaedics and Anatomy & Cell Biology, Indiana University-Purdue University, Indianapolis, Invited Lecture, September 2003: *Adaptation of bone to exercise and injury*.

Departments of Pathokinesiology & Physical Therapy and Biomedical Engineering, University of Southern California, Los Angeles, Invited Lecture, February 2004: *Adaptation of the musculoskeletal system to exercise and injury*.

Department of Kinesiology and Leisure Studies, University of Hawaii, Honolulu, Hawaii, Invited Lecture, March, 2004: *Adaptation of the musculoskeletal system to exercise and injury*.

Bone Health Research Symposium, University of British Columbia, Vancouver, Invited Keynote Lecture, May 2004: *Adaptation of the musculoskeletal system to exercise and injury*.

Rodeo Research & Clinical Care—1st International Conference, Calgary, Alberta, Invited Lecture, July 2004: *Biomechanics, sport medicine & rodeo research*.

Canadian Society of Biomechanics, Annual Meeting, Halifax, Nova Scotia, Invited Lecture, August 2004: *Successful strategies for crafting grants for CIHR*.

Whitaker Conference on Biomedical Engineering, La Jolla, California, Workshop Invited Speaker, August 2004: *Strategies for research: individual vs. team—How best to succeed*.

6th International Bone Fluid Flow Workshop, Seattle, Washington, Invited Lecture, September 2004: *Functional adaptation of bone.*

Canadian Society of Exercise Physiology, Annual Meeting, Winnipeg, Manitoba, Invited Lecture, October 2004: *Formulating successful applications for NSERC/CIHR.*

Canadian Society of Exercise Physiology, Annual Meeting, Winnipeg, Manitoba, Invited Lecture, October 2004, Symposium on Adaptation of Bone to Physical Activity—*How does bone receive and act upon the loading message?*

Departments of Orthopaedics/Sport Medicine and Biomedical Engineering, Stanford University, Palo Alto, California, February, 2005: *Adaptation of the musculoskeletal system to exercise and injury.*

Exercise Biology Program and Department of Biomedical Engineering, University of California, Davis, California, February, 2005: *Adaptation of the musculoskeletal system to exercise and injury.*

School of Health, Physical Education, and Recreation and Department of Kinesiology, Indiana University, Bloomington, Indiana, April, 2005: *Adaptation of the musculoskeletal system to exercise and injury.*

Kerby Centre of Excellence and Network in Applied Gerontology, Calgary, Alberta, Invited Lecture, April 2005: *Healthy and successful aging.*

Canadian Athletic Therapy Association, Annual Meeting, Calgary, Alberta, Invited Lecture, May 2005: *Bone-injury connection.*

Canadian Institutes for Health Research, Institute for Musculoskeletal Health and Arthritis, Symposium for Strategic Training Programs in Health Research, Montreal, Quebec, May 2005: *Alberta Provincial Bone and Joint Health Training Program.*

Department of Physical Medicine and Rehabilitation, University of Virginia, Charlottesville, Virginia, Invited Lecture, August, 2005: *Adaptation of the musculoskeletal system to exercise and injury.*

School of Human Kinetics, University of British Columbia, Vancouver, British Columbia, Invited Lecture, November, 2005: *Adaptation of the musculoskeletal system to exercise and injury.*

IT for Healthcare Wait Times, The Canadian Institute, Invited Lecture, Toronto, Ontario, May 2006: *Redesign of bone & joint health care.*

International Space Life Sciences Working Group and International Osteoporosis Foundation Congress, Invited Lecture, Toronto, Ontario, June 2006: *Space bone research—key questions and directions.*

British Columbia Surgical Access Wait Times Conference, Invited Lecture, Kelowna, British Columbia, June 2006: *Hip and knee replacement wait times and access — The Alberta model.*

The Arthritis Society of Alberta and Northwest Territories, Research Day, Invited Keynote Lecture, Calgary, Alberta, June 2006: *Redesigning bone & joint health services.*

Canadian Society of Biomechanics, Biennial Conference, Invited Keynote Lecture, Waterloo, Ontario, August 2006: *Bone: Cellular mechanisms to functional adaptation.*

Alberta Orthopaedic Society, Annual Conference, Invited Presentation, Kananaskis, Alberta, September 2006: *Alberta Bone and Joint Health Institute.*

Alberta Healthcare Auxillary Association, Annual Conference, Invited Keynote Lecture, Red Deer, Alberta, October 2006: *Redesigning bone & joint healthcare.*

XXI Congress of International Society of Biomechanics, Invited Keynote Lecture, Taipei, Taiwan, July, 2007: *Functional adaptation of bone.*

Department of Orthopaedic Surgery Research Symposium—Badgley Day, University of Michigan, Invited Lecture, Ann Arbor, Michigan, October 2007: *Adaptation of bone to exercise, diet, and injury*

MedSport, University of Michigan, Invited Lecture, Ann Arbor, Michigan, December 2007: *Adaptation of bone to diet, exercise, and injury & role of musculoskeletal and sport injury prevention.*

Division of Kinesiology, University of Michigan, Invited Lecture, Ann Arbor, Michigan, January 2008: *Adaptation of bone to diet, exercise, and injury.*

Southern California Conference on Biomechanics, American Society of Biomechanics, Invited Keynote Lecture, Thousand Oaks, California, April 2008: *Bone adaptation: Diet, exercise & injury.*

Department of Kinesiology, Pennsylvania University, Invited Lecture, College Park, Pennsylvania, April 2008: *Adaptation of bone to diet, exercise, and injury.*

Symposium on Bone, University of British Columbia, Invited Lecture, Vancouver, British Columbia, May 2008: *Functional imaging and bone adaptation.*

North American Congress of Biomechanics, Invited Tutorial Lecture, Ann Arbor, Michigan, August 2008: *Successful strategies for Canadian grants.*

North American Congress of Biomechanics, Invited Keynote Lecture (Canadian Society of Biomechanics Career Award), Ann Arbor, Michigan, August 2008: *Biomechanics in Three Acts.*

Pease Family Scholar, Invited Keynote Lecture, Department of Kinesiology and College of Human Sciences, Iowa State University, Ames, Iowa, September 2008: *Adaptation of bone to diet, exercise, or injury.*

International Biomechanics Congress—Human Biomechanics, Czech Society of Biomechanics, Invited Keynote Lecture, Prague, Czech Republic, October 2008: *Mechanisms of Bone Adaptation.*

Department of Kinesiology, Invited Lecture, University of Waterloo, Waterloo, Ontario, Canada, October 2008: *Adaptation of bone to diet, exercise, or injury.*

Department of Mechanical Engineering, Invited Lecture, University of Michigan, Ann Arbor, Michigan, October 2008: *Adaptation of bone to diet, exercise, or injury.*

Grand Rounds, Department of Orthopaedic Surgery, University of Michigan, Ann Arbor, Michigan, October 2008: *Redesigning the continuum of care for hip and knee replacements: The Alberta Project.*

Department of Industrial and Operational Engineering, Invited Lecture, University of Michigan, Ann Arbor, Michigan, October 2008: *The Alberta Model: Redesign of the continuum of care for hip and knee replacements.*

NCAA Scholarly Colloquium, Invited Keynote Lecture, Washington, DC, January 2009: *Play at your own risk: Sport and the injury epidemic.*

CIHR Provincial Training Program in Bone and Joint Health, Invited Lecture, University of Calgary and University of Alberta, Calgary, Alberta, March 2009: *The Bone & Joint Injury Prevention & Rehabilitation Center at the University of Michigan — Mission & Research.*

Grand Rounds, Invited Lecture, Department of Medicine, Division of Endocrinology, Indiana University-Purdue University Medical School, Indianapolis, Indiana, April 2009: *Effects of dietary protein, fat, and sugar on bone integrity.*

Department of Anatomy and Cell Biology, Invited Lecture, Indiana University-Purdue University Medical School, Indianapolis, Indiana, April 2009: *Bone adaptation to injury, mechanical loading, and fluid flow.*

International Symposium on Sport Injury Prevention, Invited Keynote Lecture, Oslo Sports Trauma Research Center, Oslo, Norway, May 2009: *Bone health: Diet, exercise, and injury mechanisms.*

The Canadian Arthritis Society, Invited Keynote Lecture (National Research Knowledge Translation Lecture Series), Internet webinar coordinated through Toronto, Ontario, July 2009: *Role of Bone in Osteoarthritis.*

Canadian Institutes for Health Research/Institute for Musculoskeletal Health and Arthritis, Bone Health Consensus Conference, Invited Keynote Lecture, Toronto, Ontario, November 2009: *Optimizing Bone Health—Diet & Physical Activity.*

Symposium on Ergonomic Interventions and Research: Preventing Musculoskeletal Disorders, Invited Lecture, San Francisco, California, December 2009: *Can Sports Medicine Methods Reduce the Risk of Workplace Musculoskeletal Disorders?*

Henry Ford Hospital Distinguished Scientist Lecture, Detroit, Michigan, March 2010: *Adaptation of bone to diet, exercise, and injury.*

Symposium on Joint Motion Program, University of Western Ontario, Invited Lecture, London, Ontario, May 2010: *The Alberta and Michigan models for musculoskeletal training programs.*

International Bone Fluid Flow Conference, Invited Lecture, Toronto, Ontario, October 2010: *Bone fluid flow in idealized and geometrically accurate computational models.*

International Sport and Exercise Medicine Conference—Prevention of Osteoarthritis following Exercise or Sport [Arthritis Research Campaign (ARC) and Institute of Sports and Exercise Medicine (ISEM)], Invited Keynote Lecture, London, UK, October 2010: *Response of Bone to Exercise and Injury.*

Distinguished Scientist Series, Invited Lecturer, Department of Kinesiology, University of Windsor, Ontario, Canada, February 2011: *Adaptation of Bone to Diet, Exercise, and Injury.*

Centennial Symposium, Invited Keynote Lecture, Department of Kinesiology, University of Wisconsin, Madison, Wisconsin, April 2011: *Biomechanics: Blending Movements and Tissue Adaptation.*

Congress of the International Society of Biomechanics, Invited Tutorial Lecture, Brussels, Belgium, July 2011: *Adaptation of Bone to Diet, Exercise, and Injury.*

National Academy of Kinesiology, Invited Keynote Lecture, Minneapolis, Minnesota, September 2011: *Impact of Biomechanics Research on Society.*

Alberta Osteoarthritis Conference, Invited Keynote Lecture, Canmore, Alberta, April 2012: *Team Science: Opportunities & Challenges*

Hope College, Invited Lecture, Holland, Michigan, February 2013: *Biomechanics: Blending Movement and Tissue Adaptation*

Concordia University, Invited Lecture, Ann Arbor, Michigan, April 2013: *Biomechanics: Blending Movement and Tissue Adaptation*

World Congress of Biomechanics, Invited Participant for the International Society of Biomechanics Panel Discussion, Boston, Massachusetts, July 2014: *PhD & Post-Doctoral Networking and Opportunities*

World Congress of Biomechanics, Invited Keynote Speaker for the International Society of Biomechanics Presidential Symposium, Boston, Massachusetts, July 2014: *Skeletal Adaptation: Mechanisms & Influences*

University of Calgary, Invited Keynote Speaker for the Research Symposium, 35th Anniversary of the Human Performance Laboratory, Calgary, Alberta, December 2016: *Skeletal Adaptation: Synthesis & Beyond*

Marquette University, Invited Lecture, Department of Physical Therapy/Graduate Program in Rehabilitation Science, Milwaukee, Wisconsin, February 2017: *Skeletal Adaptation*

World Congress of Rheumatology and Orthopaedics, Invited Plenary Lecture, Madrid, Spain, September 2018: *Skeletal Adaptation: Exercise, Injury & Osteoarthritis.*

University of Waterloo, Invited Lecture, Department of Kinesiology (Faculty of Applied Health Sciences), 50th Anniversary Symposium (Founding of Dept of Kinesiology), Waterloo, Ontario, Canada, April 2018: *Skeletal Adaptation: Synthesis & Beyond.*

Patent

Gu, P. and **Zernicke, R. F.** General isosurface equation for surface integration in reverse engineering. UTI REF 283.2, July 2001, Canada [A general implicit equation and an associated topology-based

integration algorithm for range surface integration. Modeling, design and manufacturing of free-form surfaces have applications ranging from automobile, aircraft, plastic manufacturing, and biomedical industries to entertainment and arts.]

Publications

Peer-Reviewed Journals (h Index=60; i10 index=161; Citations=14,044—Google Scholar—4/2018)

1. **Zernicke, R. F.**, and Waterland, J. C. Single motor unit control in m. biceps brachii. *Electromyography and Clinical Neurophysiology* **12**: 225-241, 1972.
2. **Zernicke, R. F.**, Caldwell, G., and Roberts, E. M. Fitting biomechanical data with cubic spline functions. *Research Quarterly* **47**: 9-19, 1976.
3. **Zernicke, R. F.**, Garhammer, J. J., and Jobe, F. W. Human patellar tendon rupture: A kinetic analysis. *Journal of Bone and Joint Surgery* **59A**: 179-183, 1977.
4. **Zernicke, R. F.**, and Roberts, E. M. Lower extremity forces and torques during systematic variation of non-weightbearing motion. *Medicine and Science in Sports* **10**: 21-26, 1978.
5. Butler, D., Grood, E. S., Noyes, F. R., and **Zernicke, R. F.** Biomechanics of ligaments and tendons. *Exercise and Sport Sciences Reviews* **6**: 125-183, 1978.
6. Smith, J. L., Betts, B., Edgerton, V. R., and **Zernicke, R. F.** Rapid ankle extension during paw shakes: Selective recruitment of fast ankle extensors. *Journal of Neurophysiology* **43**: 612-620, 1980.
7. Spector, S. A., Gardiner, P. F., **Zernicke, R. F.**, Roy, R. R., and Edgerton, V. R. Muscle architecture and force-velocity characteristics of cat soleus and medial gastrocnemius: Implications for motor control. *Journal of Neurophysiology* **44**: 951-960, 1980.
8. Clark, L. A., and **Zernicke, R. F.** Balance in lower limb child amputees. *Prosthetics and Orthotics International* **5**: 11-18, 1981.
9. Shapiro, D. C., **Zernicke, R. F.**, Gregor, R. J., and Diestel, J. D. Evidence for generalized motor programs using gait pattern analysis. *Journal of Motor Behavior* **13**: 33-47, 1981.
10. **Zernicke, R. F.** Biomechanical evaluation of bilateral tibial spiral fractures during skiing. *Medicine and Science in Sports and Exercise* **13**: 243-245, 1981.
11. Huston, R. L., Harlow, M. W., and **Zernicke, R. F.** Effect of restraining belts in preventing vehicle-occupant/steering-system impact. In: *Occupant Crash Interaction with the Steering System (SP-507)* SAE Technical Paper No. 820471, 1982.
12. **Zernicke, R. F.**, Gregor, R. J., and Cratty, B. J. Balance and visual proprioception in children. *Journal of Human Movement Studies* **8**: 1-13, 1982.
13. Hoy, M. G., Whiting, W. C., and **Zernicke, R. F.** Stride kinematics and knee joint kinetics of child amputee gait. *Archives of Physical Medicine and Rehabilitation* **63**: 74-82, 1982.
14. **Zernicke, R. F.**, and Gregor, R. J. The integrative role of cinematography in biomechanics research. *Proceedings of SPIE* **291**: 202-209, 1982.
15. Huston, R. L., and **Zernicke, R. F.** Computerized simulation of whole body dynamics: Aspects of human movement modeling. *Proceedings of SPIE* **291**: 180-186, 1982.
16. Smith, J. L., Smith, L. A., **Zernicke, R. F.**, and Hoy, M. G. Locomotion in exercised and non-exercised cats cordotomized at two or twelve weeks of age. *Experimental Neurology* **76**: 393-413, 1982.

17. Bodine, S. C., Roy, R. R., Meadow, D. A., **Zernicke, R. F.**, Sacks, R., and Edgerton, V. R. Architectural, histochemical, and contractile characteristics of a unique biarticular muscle: The cat semitendinosus. *Journal of Neurophysiology* **48**: 192-20, 1982.
18. Whiting, W. C., and **Zernicke, R. F.** Recognition and correlation of limb trajectory patterns. *Journal of Motor Behavior* **14**: 135-142, 1982.
19. **Zernicke, R. F.** Biomechanical and biochemical synthesis. *Medicine and Science in Sports and Exercise* **15**: 6-8, 1983.
20. Butler, D. L., Stouffer, D. C., Wukusick, P. M., and **Zernicke, R. F.** Analysis of non homogeneous strain response of human patellar tendon. *ASME AMD-56*: 109-112, 1983.
21. **Zernicke, R. F.**, Butler, D. L., Grood, E. S., and Hefzy, M. S. Strain topography of human tendon and fascia. *Journal of Biomechanical Engineering* **106**: 177-180, 1984.
22. Noyes, F. R., Butler, D. L., Grood, E. S., **Zernicke, R. F.**, and Hefzy, M. S. Biomechanical analysis of human ligament grafts used in knee-ligament repairs and reconstructions. *Journal of Bone and Joint Surgery* **66A**: 344-352, 1984.
23. Butler, D. L., Grood, E. S., Noyes, F. R., **Zernicke, R. F.**, and Brackett, K. Effects of structure and strain measurement technique on the material properties of young human tendons and fascia. *Journal of Biomechanics* **17**: 579- 596, 1984.
24. Hoy, M. G., and **Zernicke, R. F.** Modulation of limb dynamics in the swing phase of locomotion. *Journal of Biomechanics* **18**: 49-60, 1985.
25. Smith, J. L., Hoy, M. G., Koshland, G. F., Phillips, D. M., and **Zernicke, R. F.** Intralimb coordination of the paw shake response: A novel mixed synergy. *Journal of Neurophysiology* **54**: 1271-1281, 1985.
26. Hoy, M. G., **Zernicke, R. F.**, and Smith, J. L. Contrasting roles of knee and ankle muscle and inertial moments during paw shake response. *Journal of Neurophysiology* **54**: 1282-1294, 1985.
27. Vailas, A. C., **Zernicke, R. F.**, Matsuda, J., and Peller, D. Regional biochemical and morphological characteristics of rat knee meniscus. *Comparative Biochemistry and Physiology* **82B**: 283-285, 1985.
28. **Zernicke, R. F.**, Hoy, M. G., and Whiting, W. C. Ground reaction forces and center of pressure distribution in child amputee gait. *Archives of Physical Medicine and Rehabilitation* **66**: 736-741, 1985.
29. **Zernicke, R. F.**, Vailas, A. C., Shaw, S. R., Bogey, R. A., Hart, T., and Matsuda, J. Heterogeneous mechanical response of rat menisci to thermomechanical stress. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* **250**: R65-R70, 1986.
30. Vailas, A. C., **Zernicke, R. F.**, Matsuda, J. J., Curwin, S., and Durivage, J. Adaptation of rat knee meniscus to prolonged exercise. *Journal of Applied Physiology: Respiratory, Environmental, and Exercise Physiology* **60**: 1031-1034, 1986.
31. Matsuda, J. J., **Zernicke, R. F.**, Vailas, A. C., Pedrini, V. A., Pedrini-Mille, A., and Maynard, J. A. Structural and mechanical adaptation of immature bone to strenuous exercise. *Journal of Applied Physiology: Respiratory, Environmental, and Exercise Physiology* **60**: 2028-2034, 1986.
32. Hoy, M. G., and **Zernicke, R. F.** The role of intersegmental dynamics during rapid limb oscillations. *Journal of Biomechanics* **19**: 867-877, 1986.
33. Smith, J. L., and **Zernicke, R. F.** Predictions for neural control based on limb dynamics. *Trends in NeuroScience* **10**: 123-128, 1987.

34. Shaw, S. R., **Zernicke, R. F.**, Vailas, A. C., deLuna, D., Thomason, D., and Baldwin, K. Mechanical, morphological, and biochemical adaptations of bone and muscle to hindlimb suspension and exercise. *Journal of Biomechanics* **20**: 225-234, 1987.
35. Shaw, S. R., Vailas, A. C., Grindeland, R., and **Zernicke, R. F.** Effects of a 1-week spaceflight on the morphological and mechanical properties of growing bone. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* **254**: R78-R83, 1988.
36. Schneider, K., and **Zernicke, R. F.** Computer simulation of head impact: Estimation of head-injury tolerance during soccer heading. *International Journal of Sport Biomechanics* **4**: 358-371, 1988.
37. Schneider, K., **Zernicke, R. F.**, Schmidt, R. A., and Hart, T. J. Changes in limb dynamics during the practice of rapid arm movements. *Journal of Biomechanics* **21**: 805-817, 1989.
38. Schneider, K., and **Zernicke, R. F.** Jerk-cost modulations during the learning of unrestrained rapid arm movements. *Biological Cybernetics* **60**: 221-230, 1989.
39. Schneider, K., and **Zernicke, R. F.** Tolerance limits of the human head with respect to impact acceleration. *Unfallchirurg* **92**: 49-53, 1989.
40. Loitz, B. J., **Zernicke, R. F.**, Vailas, A. C., Kody, M. and Meals, R. A. Effects of short-term immobilization versus continuous passive motion on the biomechanical and biochemical properties of rabbit tendon. *Clinical Orthopaedics and Related Research* **244**: 265-271, 1989.
41. Salem, G. J., **Zernicke, R. F.**, and Vailas, A. C. Biomechanical and biochemical changes in lumbar vertebrae of rapidly growing rats. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* **256**: R259-R263, 1989.
42. Schneider, K., **Zernicke, R. F.**, and Clark, G. Modeling of jaw-head-neck dynamics during whiplash. *Journal of Dental Research* **68**: 1360-1365, 1989.
43. Schneider, K., **Zernicke, R. F.**, Ulrich, B. D., Jensen, J. L., and Thelen, E. Understanding movement control in infants through the analysis of limb intersegmental dynamics. *Journal of Motor Behavior* **22**: 493-520, 1990.
44. **Zernicke, R. F.**, Hou, J. C-H., Vailas, A. C., Nishimoto, M., Patel, S., and Shaw, S. R. Changes in the geometrical and biomechanical properties of immature male and female rat tibia. *Aviation, Space, and Environmental Medicine* **61**: 814-820, 1990.
45. Vailas, A. C., **Zernicke, R. F.**, Grindeland, R. E., Kaplansky, A., Li, K-C., and Martinez, D. A. Spaceflight effects on rat cortical bone geometry, biomechanics, and biochemistry. *FASEB Journal* **4**: 47-54, 1990.
46. **Zernicke, R. F.**, Vailas, A. C., Grindeland, R. E., Kaplansky, A., Salem, G. J., and Martinez, D. A. Spaceflight effects on biomechanical and biochemical properties of rat vertebrae. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* **258**: R1327-R1332, 1990.
47. Vailas, A. C., **Zernicke, R. F.**, Grindeland, R. E., and Li, K-C. Suspension effects on morphological and mechanical properties of rat medial collateral ligament. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* **258**: R704-R708, 1990.
48. **Zernicke, R. F.**, Vailas, A. C., Grindeland, R. E., Li, K-C., and Salem, G. J. Interactive effects of nutrition, environment, and rat-strain on cortical and vertebral bone geometry and biomechanics. *Aviation, Space, and Environmental Medicine* **61**: 640-647, 1990.
49. Li, K-C., **Zernicke, R. F.**, Barnard, R. J., and Li, A. F-Y. Effects of a high fat-sucrose diet on cortical bone morphology and biomechanics. *Calcified Tissue International* **47**: 308-313, 1990.

50. Wisleder, D., **Zernicke, R. F.**, and Smith, J. L. Speed-related changes in cat hindlimb interactive and muscular torques during the swing phase of locomotion. *Experimental Brain Research* **79**: 651-660, 1990.
51. Hou, J. C-H., Salem, G. J., **Zernicke, R. F.**, and Barnard, R. J. Structural and mechanical adaptations of immature trabecular bone to strenuous exercise. *Journal of Applied Physiology: Respiratory, Environmental, and Exercise Physiology* **69**: 1309-1314, 1990.
52. Hou, J. C-H., **Zernicke, R.**, and Barnard, R. J. High-fat-sucrose diet effects on femoral neck geometry and biomechanics. *Clinical Biomechanics* **5**: 162-168, 1990.
53. Schneider, K., and **Zernicke, R. F.** A FORTRAN package for the planar analysis of limb intersegmental dynamics from spatial coordinate data. *Advances in Engineering Software* **12**: 123-128, 1990.
54. **Zernicke, R. F.**, Vailas, A. C., and Salem, G. J. Biomechanical response of bone to weightlessness. *Exercise and Sport Sciences Reviews* **18**: 167-192, 1990.
55. Buford, J. A., **Zernicke, R. F.**, and Smith, J. L. Adaptive control for backward quadrupedal walking: I. Posture and hindlimb kinematics. *Journal of Neurophysiology* **64**: 745-755, 1990.
56. Koshland, G. F., Hoy, M. G., Smith, J. L. and **Zernicke, R. F.**, Coupled and uncoupled limb oscillations during paw-shake response. *Experimental Brain Research* **64**: 1653-1667, 1990.
57. Gregor, R. J., and **Zernicke, R. F.** (eds.) Proceedings of the XII Congress, International Society of Biomechanics, *Journal of Biomechanics*, **23** (Supplement): 1-105, 1990.
58. Hou, J. C-H., **Zernicke, R. F.**, and Barnard, R. J. Experimental diabetes, insulin treatment, and femoral neck morphology and biomechanics in rats. *Clinical Orthopaedics and Related Research* **264**: 278-285, 1991.
59. Li, K-C., **Zernicke, R. F.**, Barnard, R. J. , and Li, A. F-Y. Differential response of rat limb bones to strenuous exercise. *Journal of Applied Physiology: Respiratory, Environmental, and Exercise Physiology* **70**: 554-560, 1991.
60. Salem, G. J., **Zernicke, R. F.** and Barnard, R. J. Diet-related changes in mechanical properties of rat vertebrae. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology* **262**: R318-R321, 1992.
61. Schneider, K., and **Zernicke, R. F.** Mass, center of mass, and moment of inertia estimates for infant limb segments. *Journal of Biomechanics* **25**: 145-148, 1992.
62. Loitz, B. J., and **Zernicke, R. F.** Strenuous exercise-induced remodeling of mature bone: Relationships between in vivo strains and bone mechanics. *Journal of Experimental Biology* **170**: 1-18, 1992.
63. Grimston, S., and **Zernicke, R. F.** Exercise-associated stress responses in bone. *Journal of Applied Biomechanics* **9**: 2-14, 1993.
64. **Zernicke, R. F.**, and Schneider, K. Biomechanics and developmental neuromotor control. *Child Development* **64**: 982-1004, 1993.
65. Li, K-C., **Zernicke, R. F.**, Barnard, R. J., Li, A. F-Y., and Campbell, P. Effects of mild diabetes on immature cortical bone. *Clinical Biomechanics* **8**: 49-51, 1993.
66. Schneider, K., Hart, T. J., **Zernicke, R. F.**, Setoguchi, Y., and Oppenheim, W. L. Dynamics of below-knee child amputee gait: SACH foot versus Flex Foot. *Journal of Biomechanics* **26**: 1191-1204, 1993.

67. Thelen, E., Corbetta, D., Kamm, K., Spencer, J. P., Schneider, K., and **Zernicke, R. F.** The transition to reaching: Mapping intention and intrinsic dynamics. *Child Development* **64**: 1058-1098, 1993.
68. Hou, J. C-H., **Zernicke, R. F.** and Barnard, R. J. Effects of diabetes severity and insulin on femoral neck morphology and mechanics. *Journal of Orthopaedic Research* **11**: 263-271, 1993.
69. Salem, G. J., **Zernicke, R. F.**, Martinez, D. A., and Vailas, A. C. Adaptations of immature trabecular bone to moderate exercise: Geometrical, biochemical, and biomechanical correlates. *Bone* **14**: 647-654, 1993.
70. Smith, J. L., Chung, S. H., and **Zernicke, R. F.** Gait-related motor patterns and hindlimb kinetics for the cat trot and gallop. *Experimental Brain Research* **94**: 308-322, 1993.
71. Tidball, J. G., Salem, G., and **Zernicke, R. F.** Site and mechanical conditions for failure of skeletal muscle in experimental strain injuries. *Journal of Applied Physiology* **74**: 1280-1286, 1993.
72. Li, K-C., **Zernicke, R. F.**, Barnard, R. J., and Li, A. F-Y. Response of immature bone-ligament junction to a high fat-sucrose diet. *Clinical Biomechanics* **8**:163-165, 1993.
73. Jensen, J. L., Ulrich, B. D., Thelen, E., Schneider, K., and **Zernicke, R. F.** Adaptive dynamics of the leg movement patterns of human infants: I. The effects of posture on spontaneous kicking. *Journal of Motor Behavior* **26**: 303-312, 1994.
74. Ulrich, B. D., Jensen, J. L., Thelen, E., Schneider, K., and **Zernicke, R. F.** Adaptive dynamics of the leg movement patterns of human infants: II. Treadmill stepping in infants and adults. *Journal of Motor Behavior* **26**: 313-324, 1994.
75. Li, K-C., **Zernicke, R. F.**, Barnard, R. J., and Li, A. F-Y. Response of immature-diabetic rat bone-ligament junctions to insulin and exercise. *Clinical Biomechanics*, **10**: 331-336, 1995.
76. **Zernicke, R. F.**, Salem, G. J., Barnard, R. J., and Schramm, E. Long-term, high-fat-sucrose diet alters rat femoral neck and vertebral morphology, bone mineral content, and mechanical properties. *Bone* **16**: 25-31, 1995.
77. Jensen, J. L., Ulrich, B. D., Thelen, E., Schneider, K., and **Zernicke, R. F.** Adaptive dynamics of the leg movement patterns of human infants: III. Age-related differences in limb control. *Journal of Motor Behavior*, **27**: 366-374, 1995.
78. **Zernicke, R. F.**, Barnard, R. J., Salem, G. J., Woodward, J., Meduski, J. W, and Meduski, J. D. Adaptations of immature trabecular bone to exercise and augmented dietary protein. *Medicine and Science in Sports and Exercise* **27**: 1486-1493, 1995.
79. Huang, X., Gu, P., and **Zernicke, R. F.** Comparison of two free-form surfaces in reverse engineering. *Computer-Aided Design* **28**: 1017-1022, 1996.
80. Fowler, E. , **Zernicke, R. F.**, Setoguchi, Y., and Oppenheim, W. Energy expenditure during walking in children with proximal femoral focal deficiency. *Journal of Bone and Joint Surgery* **78A**: 1857-1862, 1996.
81. Richards, D. P., Ajemian, S. V., Wiley, J. P., and **Zernicke, R. F.** Knee joint dynamics predict patellar tendonitis in elite volleyball players. *American Journal of Sports Medicine* **24**: 676-683, 1996.
82. **Zernicke, R. F.**, Wohl, G., Greenwald, R. A., Golub, L. M., Leng, W., and Moak, S. A. Administration of systemic matrix metalloproteinase inhibitors maintains bone mechanical integrity in adjuvant arthritis. *Journal of Rheumatology* **24**: 1324-1333, 1997.

83. Judex, S., Gross, T. S., Bray, R. C., and **Zernicke, R. F.** Adaptation of bone to physiological stimuli. *Journal of Biomechanics* **30**: 421-429, 1997.
84. Bray, R. C., Doschak, M. R., Gross, T. S., and **Zernicke, R. F.** Physiological and mechanical adaptations of rabbit medial collateral ligament after anterior cruciate ligament transection. *Journal of Orthopaedic Research* **15**: 830-837, 1997.
85. Judex, S., Gross, T. S., and **Zernicke, R. F.** Strain gradients correlate with sites of exercise-induced bone forming surfaces in the adult skeleton. *Journal of Bone and Mineral Research* **12**: 1737-1745, 1997.
86. Wohl, G., Goplen, G., Ford, J., Novak, K., Hurtig, M., McPherson, R., McGann, L., and Schachar, N., and **Zernicke, R. F.** Mechanical integrity of subchondral bone in osteochondral allografts and autografts. *Canadian Journal of Surgery* **41**: 228-233, 1998.
87. Wohl, G., Loehrke, L., Watkins, B., and **Zernicke, R. F.** Effect of high-fat diet on mature bone mechanical properties, structure, and mineral content. *Calcified Tissue International* **63**: 74-79, 1998.
88. Gerritsen, K., van den Bogert, A., Hulliger, M., and **Zernicke, R. F.** Intrinsic muscle properties facilitate locomotor control—A computer simulation study. *Motor Control* **2**: 206-220, 1998.
89. Gross, T. S., Damji, A. A., Bray, R.C., and **Zernicke, R. F.** Bone hyperemia precedes disuse-induced intracortical bone resorption. *Journal of Applied Physiology* **86**: 230-235, 1999.
90. Judex, S., Whiting, W. C., and **Zernicke, R. F.** Exercise induced bone adaptations: Considerations for designing an osteogenically effective exercise program. *International Journal of Industrial Ergonomics* **24**: 235-238, 1999.
91. Schachar, N. S., Novak, K., Hurtig, M., Muldrew, K., McPherson, R., Wohl, G., **Zernicke, R. F.**, and McGann, L. E. Transplantation of cryopreserved osteochondral allografts for joint reconstruction in an ovine model. *Journal of Orthopaedic Research* **17**: 909-919, 1999.
92. Banes, A., Horesovsky, G., Larson, C., Tsuzaki, M., Noel, S., Judex, S., Archambault, J., **Zernicke, R. F.**, Herzog, W., Kelley, S., and Miller L. Mechanical load stimulates expression of novel genes in vivo and vitro in avian flexor tendon cells. *Osteoarthritis & Cartilage* **7**: 141-153, 1999.
93. Fowler, E., Hester, D., Oppenheim, W., Setoguchi, Y., and **Zernicke, R. F.** Contrasts in gait mechanics of individuals with proximal femoral focal deficiency: Syme amputation versus van Nes rotational osteotomy. *Journal of Pediatric Orthopaedics* **19**: 720-731, 1999.
94. Chan, R. C., Forrester, K., McDougall, J. J., Bray, R. C., and **Zernicke, R. F.** Dynamic measurement of bone blood perfusion with modified laser Doppler imaging. *Journal of Orthopaedic Research* **17**: 578-581, 1999.
95. He Y., Gu, P., Ferguson, K., Ronsky, J. L. and **Zernicke, R. F.** Implicit surfaces reconstruction for reverse engineering. *SPIE Proceedings: Intelligent Systems and Advanced Manufacturing*. **3520**: 204-213, 1999.
96. Schachar, N. S., Novak, K., Muldrew, K., **Zernicke, R. F.**, and McGann, L. E. Articular cartilage joint-surface reconstruction techniques. *Journal of Orthopaedic Science* **4**: 457-462, 1999.
97. Judex, S., Wohl, G. R., Wolff, R. B., Leng, W., Gillis, A. M., and **Zernicke, R. F.** Dietary fish oil supplementation adversely affects cortical bone morphology and biomechanics in growing rabbits. *Calcified Tissue International* **66**: 443-448, 2000.

98. Muldrew, K., Novak, K., Yang, H., **Zernicke, R. F.**, Schachar, N. S., and McGann, L. E. Cryopreservation of articular cartilage: Ice morphology and recovery of chondrocytes. *Cryobiology* **40**: 102-109, 2000.
99. Jaremko, J., Delorme, S., Dansereau, J., Labelle, H., Ronsky, J., Poncet, P., Harder, J., Dewar, R., and **Zernicke, R. F.** Use of neural networks to correlate spine and rib deformity in scoliosis. *Computer Methods in Biomechanics and Biomedical Engineering* **3**: 203-213, 2000.
100. Poncet, P., Delorme, S., Ronsky, J. L., Dansereau, J., Clynch, G., Harder, J., Dewar, R. D., Labelle, H., Gu, P., and **Zernicke, R. F.** Reconstruction of laser-scanned 3D torso topography and stereoradiographical spine and rib-cage geometry in scoliosis. *Computer Methods in Biomechanics and Biomedical Engineering* **4**: 59-75, 2000.
101. Judex, S., and **Zernicke, R. F.** Does the mechanical milieu associated with high-speed running lead to adaptive changes in diaphyseal growing bone? *Bone* **26**: 153-159, 2000.
102. Judex, S., and **Zernicke, R. F.** High-impact exercise and growing bone: Relation between high strain rates and enhanced bone formation. *Journal of Applied Physiology* **88**: 2183-2191, 2000.
103. Boyd, S. K., Müller, R., Matyas, J. R., Wohl, G. R., and **Zernicke, R. F.** Early morphometric and anisotropic change in periarticular cancellous bone in a model of experimental knee osteoarthritis quantified using micro-computer tomography. *Clinical Biomechanics* **15**: 624-631, 2000.
104. Boyd, S. K., Matyas, J. R., Wohl, G. R., Kantzas, A., and **Zernicke, R. F.** Early regional adaptation of periarticular bone mineral density after anterior cruciate ligament injury. *Journal of Applied Physiology* **89**: 2359-2364, 2000.
105. Srinivasan, S., Keilin, S. A., Judex, S., Bray, R. C., **Zernicke, R. F.**, and Gross, T. S. Age induced osteopenia in avian coritcal bone. *Bone* **26**: 361-365, 2000.
106. Wohl, G. R., Boyd, S. K., Judex, S., and **Zernicke, R. F.** Functional adaptation of bone to exercise and injury. *Journal of Science and Medicine in Sport* **3**: 313-324, 2000.
107. Muldrew, K., Novak, K., Sudholme, C., **Zernicke, R. F.**, Schachar, N. S., and McGann, L. Transplantation of articular cartilage following a step-cooling cryopreservation protocol. *Cryobiology* **43**: 260-267, 2001.
108. Davies, T.C., Kiefer G., and **Zernicke, R.F.** Ankle and first metatarsophalangeal joint dorsiflexion in children with clubfoot. *Journal of Pediatric Orthopaedics* **21**: 727-730, 2001.
109. Davies, T.C., Kiefer G., and **Zernicke, R.F.** Hindfoot and forefoot biomechanics of children with clubfoot. *Journal of Foot Surgery (India)* **17**: 61-66, 2002. (Invited Paper)
110. Davies, T.C., Kiefer G., and **Zernicke, R.F.** Kinematics and kinetics of the hip, knee, and ankle of clubfoot children following posteromedial release. *Journal of Pediatric Orthopaedics*. **21**: 366-371, 2001.
111. Boyd, S., Shrive, N. G., Wohl, G., Müller, R., and Zernicke, R. F. Measurement of cancellous bone strain during mechanical tests using a new extensometer device. *Medical Engineering and Physics* **23**: 411-416, 2001.
112. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Prediction of spinal deformity in scoliosis from torso surface cross sections. *Spine* **26**: 1583-1591, 2001.
113. Uludag, H., Gao, T., Wohl, G., Kantoci, D., and **Zernicke, R. F.** Bone affinity of a bisphosphonate conjugated protein in vivo. *Biotechnology Progress* **16**:1115-1118, 2000.

114. Shymkiw, R. C., Bray, R. C., Boyd, S. K., Kantzas, A., and **Zernicke, R. F.** Physiological and mechanical adaptation of periarticular cancellous bone following joint ligament injury. *Journal of Applied Physiology* **90**: 1083-1087, 2001.
115. Shymkiw, R. C., **Zernicke, R. F.**, Boyd, S. K., and Bray, R. C. Evaluation of laser Doppler perfusion imaging for measurement of blood flow in cortical bone. *Journal of Applied Physiology*, **90**: 1314-1318, 2001.
116. **Zernicke, R. F.**, Wohl, G. R., Boyd, S. K., and Judex, S. Functional adaptation of bone. *Journal of Medical and Biological Engineering* **21**: 75-78, 2001.
117. Wohl, G. R., Chan, R. C-C., Matyas, J. R., Kloiber, R., and **Zernicke, R. F.** Periarticular cancellous bone changes following anterior cruciate ligament injury. *Journal of Applied Physiology* **91**: 336-342, 2001.
118. Richards, D., Ajemian, S., Wiley, P., Brunet, J. A., and **Zernicke, R. F.** Relation between ankle joint dynamics and patellar tendiopathy in elite volleyball players. *Clinical Journal of Sport Medicine* **12**: 266-272, 2002.
119. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Indices of torso asymmetry related to spinal deformity in scoliosis *Clinical Biomechanics*, **17**: 559-568, 2002.
120. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Genetic algorithm-neural network estimation of Cobb angle from torso asymmetry in scoliosis. *Journal of Biomechanical Engineering*, **124**: 496-503, 2002.
121. Boyd, S., Mueller, R., and **Zernicke, R. F.** Mechanical and architectural bone adaptation in early-stage experimental osteoarthritis. *Journal of Bone and Mineral Research* **17**: 687-694, 2002.
122. Jaremko, J., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Comparison of Cobb angles measured manually, calculated from 3-D spinal reconstruction, and estimated from torso asymmetry. *Computer Methods in Biology and Biomedical Engineering*, **5**: 277-281, 2002.
123. Poncet, P., Jaremko, J. L., Ronsky, J., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Prediction of spinal deformity in scoliosis from geometric torsion. *Studies in Health Technol Inform*, **91**: 64-67, 2002.
124. Wu, H., Xue, D., Harder, J., Ronsky, J. L., Poncet, P., Jaremko, J., Clynch, G., and **Zernicke, R. F.** Design and manufacturing of customized braces for scoliosis treatment. *Proceedings of the American Society of Mechanical Engineers (DETC2002)*, CIE-34477, pp. 1-10, 2002.
125. Rucker, D., Hanley, D. A., and Zernicke, R. F. Response of bone to exercise and aging. *Locomotor System - Advances in Research, Diagnostics and Therapy* **9**: 6-22, 2002.
126. Doschak, M. R., Cooper, D. M. L., Huculak, C. N., Matyas, J. R., Hart, D. A., Hallgrimsson, B., **Zernicke, R. F.**, and Bray, R. C. Angiogenesis in the distal femoral chondroepiphysis of the rabbit during development of the secondary centre of ossification. *Journal of Anatomy* **203**: 223-233, 2003.
127. LaMothe, J. M., Hepple, R. T., and **Zernicke, R. F.** Bone adaptation with aging and caloric restriction in Fischer 344 x Brown F1-hybrid rats. *Journal of Applied Physiology* **95**: 1739-1745, 2003. [Selected as a special *Highlighted Topics Contribution*]

128. Gittens, S. A., Matyas, J. R., **Zernicke, R. F.** and Uludag, H. Imparting bone affinity to glycoproteins through the conjugation of bisphosphonates. *Pharmacology Research* **20**: 978-987, 2003.
129. Pardy, C., Wohl, G. R., Ukrainetz, P., Sawers, A., Boyd, S. K., and **Zernicke R. F.** Maintenance of bone mass and architecture in denning black bears (*Ursus americanus*). *Journal of Zoology (London)* **263**: 359-364, 2004.
130. Ajemian, S., Thon, D., Clare, P., Kaul, L., **Zernicke, R. F.**, and Loitz-Ramage, B. J. Cane-assisted gait biomechanics and electromyography following total hip arthroplasty. *Archives of Physical Medicine and Rehabilitation* **85**: 1966-1971, 2004.
131. Doschak, M. R., Wohl, G. R., Hanley, D. A., Bray, R. C., **Zernicke, R. F.** Antiresorptive therapy conserves some periarticular bone and ligament mechanical properties after anterior cruciate ligament disruption in the rabbit knee. *Journal of Orthopaedic Research* **22**: 942-948, 2004.
132. Gittens, S. A., Wohl, G. R., **Zernicke, R. F.**, Matyas, J. R., Morley, P. and Uludag, H. Systemic bone formation with weekly PTH administration in ovariectomized rats. *Journal of Pharmacy & Pharmaceutical Sciences* **7**: 27-37, 2004.
133. LaMothe, J. M. and **Zernicke, R. F.** Rest-insertion combined with high-frequency loading regimes enhances osteogenesis. *Journal of Applied Physiology* **96**: 1788-1793, 2004.
134. Pardy, C., Matyas, J., and **Zernicke, R. F.** Doxycycline effects on mechanical and morphological properties of early and late stage osteoarthritic bone following anterior cruciate ligament injury. *Journal of Applied Physiology* **97**: 1254-1260, 2004.
135. Wu, H. Ronsky, J., Poncet, P., Cheriet, F., Xue, D., Harder, J. A., and **Zernicke, R. F.** Prediction of scoliosis progression in time series using a hybrid learning technique. *Proceedings of IEEE Engineering Medicine & Biology* **6**: 6452-6455, 2005.
136. Doschak, M. R. and **Zernicke, R. F.** Structure, function, and adaptation of bone-tendon and bone-ligament complexes. *Journal of Musculoskeletal and Neuronal Interactions* **5**: 35-40, 2005.
137. Haque, T., Uludag, H., **Zernicke, R. F.** and Winn, S. R. Osteogenic response of bone marrow stromal cells from normal and ovariectomized rats to basic fibroblast growth factor and bone morphogenetic protein-2. *Tissue Engineering* **11**: 634-644, 2005.
138. LaMothe, J. M., Hamilton, N. H. and **Zernicke, R. F.** Strain rate influences periosteal adaptation in mature bone. *Medical Engineering and Physics* **27**: 277-284, 2005.
139. Gittens, S., Bansal, G., **Zernicke, R. F.**, and Uludag, H. Designing proteins for bone targeting. *Advanced Drug Delivery Reviews* **57**: 1011-1036, 2005.
140. Lambert, J., LaMothe, J. M., **Zernicke, R. F.**, Auer, R. N., Reimer, R. A. Dietary restriction does not adversely affect bone geometry and mechanics in rapidly growing male Wistar Rats. *Pediatric Research* **57**: 227-231, 2005.
141. Bansal, G., Wright, J. E. I., Zhang, S., **Zernicke, R. F.**, and Uludag, H. Imparting mineral affinity to proteins with thiol-labile disulfide linkages. *Journal of Biomedical Materials Research: Part A* **15**: 618-628, 2005.
142. Bergeron, C., Cheriet, F., Ronsky, J. L., **Zernicke, R.F.**, and Labelle, H. Prediction of lateral scoliotic spine curve from trunk surface using support vector regression. *Engineering Applications of Artificial Intelligence* **18**: 973-983, 2005.

143. Grant, J. A., Mohtadi, N., Maitland, M., and **Zernicke, R. F.** Comparison of home- vs. physiotherapy-supervised rehabilitation programs following ACL reconstruction: A randomized clinical trial. *American Journal of Sports Medicine* **33**: 1288-1297, 2005.
144. Doschak, M. R., LaMothe, J. M., Cooper, D. M. L., Hallgrimsson, B., Hanley, D. A., Bray, R. C., and **Zernicke, R. F.** Bisphosphonates reduce bone mineral loss at ligament entheses after joint injury. *Osteoarthritis and Cartilage* **13**: 790-797, 2005.
145. Cooper, D. M. L., Goulet, G. C., MacKay, C. J., Martinuzzi, R., Coombe, D., and **Zernicke, R. F.** Modeling hierarchical levels of fluid flow in cortical bone: Integrating fluid flow simulation with micro-CT. *Proceedings of Canadian Medical and Biological Engineering Society*. Vancouver, British Columbia, 2006.
146. Frank, C. B., Dick, D., Smith, D., Gooch, K., Wasylak, T., and **Zernicke, R. F.** The Alberta Bone and Joint Health Institute: Creating sustainable accountability through collaboration, relevant measurement and timely feedback. *HealthcarePapers* **7**: 36-40, 2006.
147. **Zernicke, R. F.**, MacKay, C., and Lorincz, C. Mechanisms of bone remodeling during weight bearing exercise. *Applied Physiology, Nutrition and Metabolism* **31**: 655-660, 2006.
148. Antolic, A., Roy, B. D., Tarnopolsky, M. A., **Zernicke, R. F.**, Wohl, G., Shaughnessy, S. G., and Bourgeois, J.M. Creatine monohydrate increases bone mineral density in young Sprague-Dawley rats. *Medicine and Science in Sports and Exercise* **39**: 816-820, 2007.
149. Sran, M., Boyd, S. K., Cooper, D., Khan, K., **Zernicke, R. F.**, and Oxland, T. R. Regional trabecular morphology assessed by micro-CT is correlated with failure of aged thoracic vertebrae under a posteroanterior load and may determine the site of fracture. *Bone* **40**: 751-757, 2007.
150. Varkey, M., Kucharski, C., Doschak, M. R., Winn, S. R., Borchmann, E. J., Matyas, J. R., **Zernicke, R. F.**, and Uludag, H. Osteogenic response of bone marrow stromal cells from normal and ovariectomized rats treated with a low dose of basic fibroblast growth factor. *Tissue Engineering* **13**: 809-817, 2007.
151. Pazos, V., Cheriet, F., Dansereau, J., Ronsky, J., **Zernicke, R. F.**, Labelle, H. Reliability of trunk shape measurements based on 3-D surface reconstructions. *European Spine Journal* **16**: 1882-1891, 2007.
152. MacNeil, J. A., Doschak, M. R., **Zernicke, R. F.**, and Boyd, S. K. Preservation of periarticular cancellous morphology and mechanical strength in post-traumatic experimental osteoarthritis by antiresorptive therapy. *Clinical Biomechanics* **23**: 365-371, 2008.
153. Goulet, G. C., Cooper, D. M. L., Coombe, D., and **Zernicke, R. F.** Influence of cortical canal architecture on lacunocanicular pore pressure and fluid flow. *Computer Methods in Biomechanics and Biomedical Engineering* **11**: 379-387, 2008.
154. Tapper, J., Fukushima, S., Azuma, H., Sutherland, C., Marchuk, L., Thornton, G., Ronsky, J. L., **Zernicke, R. F.**, Shrive, N. G., and Frank, C. B. Dynamic in vivo kinematics of the ACL/MCL transected ovine stifle joint. *Journal of Orthopaedic Research* **26**: 660-672, 2008.
155. Westerbeek, Z., Hepple, R., and **Zernicke, R. F.** Interactive effects of aging and caloric restriction on bone structure and mechanical properties. *Journal of Gerontology A: Biological Sciences and Medical Sciences* **63**: 1131-1136, 2008.
156. Croft, J., von Tscharnner, V., and **Zernicke, R. F.** Movement variability and muscle activity relative to center of pressure during unipedal stance on solid and compliant surfaces. *Motor Control* **12**: 283-297, 2008.

157. Gooch, K., Smith, D., Wasylak, T., Faris, P., Marshall, D., Khong, H., Hibbert, J., Parker, R., **Zernicke, R. F.**, Beaupre, L., Pearce, T., Johnston, W., and Frank, C. B. The design and execution of a pragmatic randomized controlled trial to evaluate a new evidence-based continuum of care for the delivery of primary hip and knee replacements: The Alberta Hip and Knee Replacement Pilot Project. *International Journal of Technology Assessment in Health Care* **25**: 113-123, 2009.
158. Lorincz, C., Manske, S., and **Zernicke, R. F.** Bone health (Part I): Nutrition. *Sports Health: A Multidisciplinary Approach* **1**: 253-260, 2009.
159. Manske, S., Lorincz, C., and **Zernicke, R. F.** Bone health (Part II): Physical activity. *Sports Health: A Multidisciplinary Approach* **1**: 341-346, 2009.
160. **Zernicke, R. F.**, Antle, K. A., McLean, S. G., Palmieri-Smith, R. M., Ashton Miller, J. A., and Wojtys, E. M. Play at your own risk: Sport and the injury epidemic. *Journal of Intercollegiate Sport* **2**: 42-63, 2009.
161. Bergeron, C., Cheriet, F., Ronsky, J. L., **Zernicke, R. F.**, and Labelle, H. Robust prediction of three-dimensional spinal curve from back surface for non-invasive follow-up of scoliosis. *Proceedings of SPIE* (In press).
162. Wu, H., Ronsky, J. L., Cheriet, F., Harder, J., and **Zernicke, R. F.** Scoliotic progression patterns in prognostic factors and future prediction of spinal deformity progression. *Studies in Health Technology and Informatics* **123**: 40-46, 2006.
163. Wang, G., Siggers, K., Zhang, S., Jiang, H., Xu, A., **Zernicke, R. F.**, Matyas, J., and Uludag, H. Preparation of BMP-2 containing bovine serum albumin (BSA) nanoparticles stabilized by polymer coating. *Pharmaceutical Research* **12**: 2896-2909, 2008.
164. Doschak, M. R., Kucharski, C. M., Wright, J. E. I., **Zernicke, R. F.**, and Uludag, H. Improved bone delivery of osteoprotegerin by bisphosphonate conjugation in a rat model of osteoarthritis. *Molecular Pharmaceutics* **6**: 634-640, 2009.
165. Goulet, G. C., Coombe, D., Martinuzzi, R. J., and **Zernicke, R. F.** Poroelastic evaluation of fluid movement through the lacunocanalicular system. *Annals of Biomedical Engineering* **37**: 1390-1402, 2009.
166. Tapper, J. E., Funakoshi, Y., Hariu, M., Marchuk, L., Thornton, G. M., Ronsky, J. L., **Zernicke, R. F.**, Shrive, N. G., and Frank, C. B. ACL/MCL transection effects on intra-ligament distance of healing and remaining intact ligaments in the ovine model. *Journal of Biomechanics* **42**: 1825-1833, 2009.
167. Goulet, G. C., Coombe, D., Tran, D., Martinuzzi, R., and **Zernicke, R. F.** Validation and application of iterative coupling to poroelastic problems in bone fluid flow. *Bulletin of Applied Mechanics* **5**: 6-17, 2009.
168. Doschak, M. R., Kucharski, C. M., Wright, J. E. I., **Zernicke, R. F.**, and Uludag, H. Improved delivery and retention of osteoprotegerin to bone after conjugation to a bisphosphonate drug in a rat osteoarthritis model. *Molecular Pharmaceutics* **6**: 634-640, 2009.
169. Lorincz, C., Riemer, R. A., Boyd, S. K., and **Zernicke, R. F.** High fat, sucrose diet impairs geometrical and mechanical properties of cortical bone in mice. *British Journal of Nutrition* **103**: 1302-1308, 2010.
170. Manske, S. L., Boyd, S. K., and **Zernicke, R. F.** Muscle and bone follow similar temporal patterns of recovery from muscle-induced disuse due to Botulinum toxin injection. *Bone* **46**: 24-31, 2010.

171. Aslam, M. N., Kreider, J. M., Paruchuri, T., Bhagavathula, H., DaSilva, M., **Zernicke, R. F.**, Goldstein, S. A., and Varani, J. A mineral-rich extract from the red marine algae, *Lithothamnion calcareum*, preserves bone structure and function in female mice on a western-style diet. *Calcified Tissue International* **86**: 313-324, 2010.
172. Manske, S. L., Boyd, S. K., and **Zernicke, R. F.** Muscle changes can account for bone loss after Botulinum toxin injection. *Calcified Tissue International* **87**: 541-549, 2010.
173. Jones, M. D., Tran, Ch., Li, G., Maksymowych, W., **Zernicke, R. F.**, and Doschak, M. R. In vivo microfocal computed tomography and micro-magnetic resonance imaging evaluation of antiresorptive and anti-inflammatory drugs as preventative treatments of osteoarthritis in the rat. *Arthritis & Rheumatism* **62**: 2726-2735, 2010.
174. Wu, H., Ronsky, J. L., Cheriet, F., Harder, J. A., Kupper, J., and **Zernicke, R. F.** Prediction of scoliosis progression with serial three-dimensional spinal curves and artificial progression surface technique. *Medical & Biological Engineering & Computing* **48**: 1065-1075, 2010.
175. Wu, H., Ronsky, J. L., Cheriet, F., Harder, J., Kuepper, J. C., and **Zernicke, R. F.** Time series spinal radiographs as prognostic factors for scoliosis and progression of spinal deformities. *European Spine Journal* **20**: 112-117, 2011.
176. Goulet, G. C., Halonen, N. R., Koch, L. G., Britton, S. L., **Zernicke, R. F.**, and Kozloff, K. M. Osteoblast response to ovariectomy is enhanced in intrinsically high aerobic capacity rats. *Calcified Tissue International* **88**: 325-335, 2011.
177. Manske, S. L., Boyd, S. K., and **Zernicke, R. F.** Vertical ground reaction forces diminish in mice after BTX injection. *Journal of Biomechanics* **44**: 637-643, 2011.
178. Fried, A., Manske, S. L., Eller, L. K., Lorincz, C., Reimer, R. A., and **Zernicke, R. F.** Skim milk powder enhances trabecular bone architecture compared with casein or whey in obese rats. *Nutrition* **28**: 331-335, 2012.
179. **Zernicke, R. F.**, Goulet, G. C., Cavanagh, P. R., Nigg, B. M., Ashton Miller, J. A., McKay, H. A., and van den Bogert, T. Impact of biomechanics research on society. *Kinesiology Review* **1**: 5-16, 2012.
180. Reimer, R. A., LaMothe, J. M., and **Zernicke, R. F.** Leptin deficiency and its effect on tibial and vertebral bone mechanical properties in JCR:LA-corpulent rats. *Journal of Obesity* (Vol. 2012) Article ID 650193, 7 pp, 2012.
181. Gooch, K., Marshall, D. A., Faris, P. D., Khong, H., Waslyak, T., Pearce, T., Johnston, D. W. C., Arnett, G., Hibbert, J., Beaupre, L. A., **Zernicke, R. F.**, and Frank, C. B. Comparative effectiveness of alternative clinical pathways for primary hip and knee joint replacements patients: A pragmatic randomized, controlled trial. *Osteoarthritis and Cartilage* **20**: 1086-1094, 2012.
182. Monteleone, B., Ronsky, J. L., Meeuwisse, W., and **Zernicke, R. F.** Lateral hop movement assesses ankle joint complex dynamics and muscle activity. *Journal of Applied Biomechanics* **28**: 331-335, 2012.
183. Visser, D., Xue, D., Ronsky, J. L., Harder, J., and **Zernicke, R. F.** Computer-aided optimal design of custom scoliosis braces considering clinical and patient evaluations. *Computer Methods and Programs in Biomedicine* **107**: 478-489, 2012.
184. Manske, S. L., Good, C. A., Boyd, S. K., and **Zernicke, R. F.** High-frequency, low-magnitude vibration does not prevent bone loss resulting from muscle disuse in mice follow Botulinum toxin injection. *PLoS ONE* **7**: e36486, 2012.

185. Palmieri-Smith, R., Villwock, M., Downie, B., Hecht, G., and **Zernicke, R. F.** Effects of pain and effusion on quadriceps activation and strength. *Journal of Athletic Training* **48**: 186-191, 2013.
186. Deneweth, J.M., Pomeroy, S. M., Russell, J. R., McLean, S. G., **Zernicke, R. F.**, Bedi, A., and Goulet, G. C. Position-specific hip and knee kinematics in NCAA football athletes. *Orthopaedic Journal of Sports Medicine* **2**: 2014.
187. Monteleone, B., Ronsky, J. L., Meeuwisse, W., and **Zernicke, R. F.** Ankle kinematics and muscle activity in functional ankle instability. *Clinical Journal of Sport Medicine* **24**: 62-68, 2014.
188. Whiteside, D., Deneweth, J. M., Pohorence, M., Sandoval, B., Russell, J., McLean, S. G., **Zernicke, R. F.**, and Goulet, G. C. Grading the Functional Movement Screen™: A comparison of manual (real-time) and objective methods. *Journal of Strength and Conditioning Research* 2014 August 26 2014. (Epub ahead of print).
189. Whiteside, D., McGinnis, R., Deneweth, J. M., **Zernicke, R. F.**, and Goulet, G. C. Ball flight kinematics, release variability and in-season performance in elite baseball pitching. *Scandinavian Journal of Medicine and Science in Sports*, 2015 March 24. Doi: 10.1111/sms.qw433. (Epub ahead of print).
190. Whiteside, D., Deneweth, J. M., Bedi, A., **Zernicke, R. F.**, and Goulet, G. C. Femoroacetabular impingement (FAI) in elite ice hockey goaltenders: Etiological implications of on-ice hip mechanics. *American Journal of Sports Medicine* **43**: 1689-1697, 2015. (DOI: 10.1177/0363546515578251).
191. Whiteside, D., Martini, D. N., **Zernicke, R. F.**, and Goulet, G. C. Changes in starting pitchers performance across the duration of a Major League Baseball game. *International Journal of Sports Physiology and Performance*, 2015, July 27 (Epub ahead of print).
192. Gordon, S. E., Bartholomew, J. B., Kreider, R. B., **Zernicke, R. F.**, and Rudisill, M. E. Internal and external resource generation: Creative strategies for Kinesiology programs. *Kinesiology Review*. **5**: 235-243, 2016.
193. Whiteside, D., Martini, D., **Zernicke, R. F.**, & Goulet, G. Ball speed and release consistency predict pitching success in Major League Baseball. *Journal of Strength and Conditioning Research* (In press).
194. Whiteside, D., Martini, D., **Zernicke, R. F.**, and Goulet, G. C. Predictors of ulnar collateral ligament reconstruction in Major League Baseball pitchers. *American Journal of Sports Medicine* (Published online May 6, 2016; DOI: 10.1177/0363546516643812).
195. Agresta, C. E., Peacock, J., Housner, J., **Zernicke, R. F.**, and Deneweth Zendler, J. Experience does not influence injury-related joint kinematics and kinetics in distance runners *Gait & Posture* (In press).
196. Collins, K. H., Herzog, W., MacDonald, G., Reimer, R. A., Rios, J. L., Smith, I. C., **Zernicke, R. F.**, and Hart, D. A. Obesity, metabolic syndrome, and musculoskeletal disease: Common inflammatory pathways suggest a central role for loss of muscle integrity. *Frontiers in Physiology* **9**: 112, 2018. Published 23 February 2018 (DOI: 3389/fphys.2018.00112)
197. Agresta, C. E., Kessler, S., Southern, E., Goulet, G. C., **Zernicke, R. F.**, and Zendler, J. D. Immediate and short-term adaptations to maximalist and minimalist running shoes, *Footwear Science*, DOI: 10.1080/19424280.2018.1460624 (2018).

Peer-Reviewed Conference Papers

1. Youm, Y., Huang, T.C., **Zernicke, R. F.**, and Roberts, E. M. Mechanics of simulated kicking. In: *Mechanics and Sport* Bleustein, J. (ed.) American Society of Mechanical Engineers, New York, pp. 183-195, 1973.
2. Roberts, E. M., **Zernicke, R. F.**, Youm, Y., and Huang, T. C. Kinetic parameters of kicking. In: *Biomechanics IV* Nelson, R. C. and Morehouse, C. A. (eds.) University Park Press, Baltimore, pp. 157-162, 1974.
3. Roberts, T. M., Anderson, M. B., and **Zernicke, R. F.** Electromyographic analysis using metal oxide semiconductor circuitry. In: *Biomechanics IV* Nelson, R.C. and Morehouse, C.A. (eds.) University Park Press, Baltimore, pp. 328-331, 1974.
4. **Zernicke, R. F.**, and Roberts, E. M. Human lower extremity kinetic relationships during systematic variations in resultant limb velocity. In: *Biomechanics V-B* Komi, P.V. (ed.) University Park Press, Baltimore, pp. 20-25, 1975.
5. **Zernicke, R. F.**, Gregor, R. J., and Cratty, B. J. Quantification of postural stability in normal children. In: *Biomechanics VI-A* Asmussen, E. and Jorgensen, K.J. (eds.) University Park Press, Baltimore, pp. 130-134, 1978.
6. Gregor, R. J., and **Zernicke, R. F.** Kinesiology as a life science: An undergraduate curriculum. In: *Proceedings of Kinesiology: A National Conference on Teaching* Dillman, C. J. and Sears, R. (eds.) University of Illinois, Champaign-Urbana, Illinois, pp. 31-36, 1978.
7. **Zernicke, R. F.**, and Gregor, R. J. Instructional audio-slide modules for biomechanics. In: *Proceedings of Kinesiology: A National Conference on Teaching* Dillman, C. J. and Sears, R. (eds.) University of Illinois, Champaign-Urbana, Illinois, pp. 245-251, 1978.
8. Hoy, M. G., **Zernicke, R. F.**, and Smith, J. L. Emergence of stable limb oscillations during paw-shake response. In: *Biomechanics X-A*. Jonsson, B. (ed.) Human Kinetics Publ., Champaign, Illinois, pp. 465-470, 1987.
9. Hart, T. J., Cox, E. M., Hoy, M. G., Smith, J. L., and **Zernicke, R. F.** Intralimb kinetics of perturbed paw-shake response. In: *Biomechanics X-A*. Jonsson, B. (ed.) Human Kinetics Publ., Champaign, Illinois, pp. 471-478, 1987.
10. Deneweth, J. M., McGinnis, R., **Zernicke, R. F.**, Goulet, G. C. Individual-specific determinants of successful adaptation in minimal and maximal running shoes. *Footwear Science*, 7(Supp1), S97-S99, 2015.

Book Chapters

1. **Zernicke, R. F.** The emergence of human biomechanics. In: *Perspectives on the Academic Discipline of Physical Education* Brooks, G. A. (ed.) Human Kinetics Publ., Champaign-Urbana, Illinois, pp. 124-136, 1981.
2. Smith, J. L., Edgerton, V. R., Eldred, E., and **Zernicke, R. F.** The chronic spinalized cat: A model for neuromuscular plasticity. In: *Nervous System Regeneration* Giuffrida-Stella, A.M., Haber, B., Hashim, G. and Perez-Polo, R., (eds.) A. Liss Publ., New York, pp. 357-373, 1983.
3. Smith, J. L., Bradley, N. S., Carter, M. C., Giuliani, C. A., Hoy, M. G., Koshland, G. F., and **Zernicke, R. F.** Rhythmical movements of the hindlimbs in spinal cat: Considerations for a controlling network. In: *Development and Plasticity of the Mammalian Spinal Cord* Goldberger, M., Gorio, A. and Murray, M., (eds.) Liviana Press, Padova, pp. 347-361, 1986.

4. Smith, J. L., Buford, J. A., and **Zernicke, R. F.** Constraints during backward walking in the quadruped. In: *Posture and Gait: Development, Adaptation and Modulation*. Amblard, B., Berthoz, A. and Clarac, F. (eds.) Elsevier Science Publishers, New York, NY, pp. 391-400, 1988
5. **Zernicke, R. F.** Movement dynamics and connective tissue adaptation. In: *Future Directions in Exercise and Sport Science Research*. Skinner, J., Corbin, C., Landers, D., Martin, P., and Wells, C. (eds.) Human Kinetics Publ., Champaign, Illinois, pp. 137-150, 1989.
6. **Zernicke, R. F.**, and Loitz, B. J. Myotendinous adaptation to conditioning. In: *Sports-Induced Inflammation: Clinical and Basic Concepts*. Leadbetter, W.B., Buckwalter, J.A. and Gordon, S.J. (eds.) American Academy of Orthopaedic Surgeons, Park Ridge, Illinois, pp. 687-698, 1990.
7. **Zernicke, R. F.**, and Salem, G. J. Flexibility training. In: *Sports Medicine: The School Age Athlete*. Reider, B. (ed.) W. B. Saunders, Philadelphia, Pennsylvania, pp. 1-18, 1991. (Revised in 2nd Edition, 1995).
8. **Zernicke, R. F.**, Salem, G. J. and Alejo, R. K. Endurance training. In: *Sports Medicine: The School Age Athlete*. Reider, B. (ed.) W. B. Saunders, Philadelphia, Pennsylvania, pp. 40-51, 1991. (Revised in 2nd Edition, 1995).
9. **Zernicke, R. F.**, Schneider, K., and Buford, J. A. Intersegmental dynamics during gait: Implications for control. In: *Adaptability of Human Gait: Implications for the Control of Locomotion*. Patla, A. E. (ed.), Elsevier Science Publishers, Amsterdam pp. 187-202, 1991.
10. **Zernicke, R. F.**, and Loitz, B. J. Exercise-related adaptations in connective tissue. In: *Encyclopedia of Sports Medicine: Strength and Power in Sports*. Komi, P. (ed.) Blackwell Scientific Publ., Oxford, United Kingdom, pp.77-95, 1991.
11. Thelen, E., Jensen, J. L., Kamm, K., Corbetta, D., Schneider, K., and **Zernicke, R. F.** Infant motor development: Implications for motor neuroscience. In: *Tutorials in Motor Neuroscience*. Stelmach, G.E. and Requin, J. (eds.) Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 43-57, 1991.
12. Thelen, E., **Zernicke, R. F.**, Schneider, K., Jensen, J. L., Kamm, K., and Corbetta, D. The role of intersegmental dynamics in infant neuromotor development. In: *Tutorials in Motor Behavior II*. Stelmach, G.E. and Requin, J. (eds.) Elsevier Science Publishers, Amsterdam, pp. 533-548, 1992.
13. Loitz, B. J. and **Zernicke, R. F.** Bone biology and mechanics. In: *Athletic Injuries and Rehabilitation*, Zachazewski J. E., Magee D. J. and Quillen W. S. (eds.) Saunders, Philadelphia, Pennsylvania, 1996, pp. 99-119.
14. **Zernicke, R. F.** and Smith, J. L. Biomechanical insights into neural control of movement. In: *Handbook of Physiology, Section 12. Exercise: Regulation and Integration of Multiple Systems*, Rowell, L. B. and Shepherd, J. T. (eds.) American Physiological Society, Bethesda, Maryland, 1996, pp. 293-330.
15. Judex, S., Whiting, W. C., and **Zernicke, R. F.** Bone biomechanics and fractures. In: *Biomechanics in Ergonomics*, Kumar, S. (ed.) Taylor & Francis, London, U. K. pp. 59-74, 1999.
16. **Zernicke, R. F.**, and Judex, S. Adaptation of biological materials to exercise, disuse, and aging. In: *Biomechanics of the Musculo-Skeletal System*. Nigg, B. M. and Herzog, W. (Eds.) Wiley and Sons, Sussex, England, pp. 189-244, 1999.
17. Poncet, P., Delorme, S., Ronsky, J. L., Dansereau, J., Clynch, G., Harder, J., Dewar, R. D., Labelle, H., Gu, P-H., and **Zernicke, R. F.** 3D reconstructions of the external and internal geometries of the trunk using laser and stereo-radiographic imaging technique. In: *Technology and Informatics:*

Research into Spinal Deformities 2, Stokes, I. A. F. (ed.) IOS Press, Amsterdam, The Netherlands, pp. 21-24, 1999.

18. **Zernicke, R. F.**, and Whiting, W. C. Mechanisms of musculoskeletal injury. In: *IOC Encyclopaedia of Sports Medicine. Biomechanics in Sport*. Zatsiorsky, V. (Ed.) Blackwell Scientific Publ., Oxford, United Kingdom, pp. 507-522, 2000.
19. **Zernicke, R. F.** and Loitz-Ramage, B. J. Exercise-related adaptations in connective tissue. In: *Encyclopedia of Sports Medicine: Strength and Power in Sports (2nd Edition)*. Komi, P. (ed.) Blackwell Scientific Publ., Oxford, United Kingdom, pp. 96-113, 2002.
20. Rucker, D., Hanley, D. A., and **Zernicke, R. F.** Bone adaptation with exercise and aging. In *Proceedings of International Conference on Biomechanics of Man 2002*. Jelen, K., Kusova, S., Chalupova, M., and Otahal, J. (eds.) Charles University, Prague, Czech Republic, pp. 141-146, 2002.
21. **Zernicke, R. F.**, Wohl, G. R., and LaMothe, J. The Skeletal-Articular System. In *ACSM's Advanced Exercise Physiology*. Tipton, C. M. (ed.) Lippincott, Williams & Wilkins, Philadelphia, PA, pp. 95-111, 2006.
22. Loitz, B. J. and **Zernicke, R. F.** Bone biology and mechanics. In: *Athletic Injuries and Rehabilitation (2nd Edition)*, Magee D. J., Zachazewski J. E., and Quillen W. S. (eds.) Saunders, Philadelphia, Pennsylvania, pp. 122-143, 2007.
23. **Zernicke, R. F.**, Judex, S., Lorincz, C. Adaptation of biological materials to exercise, disuse, and aging. In: *Biomechanics of the Musculo-Skeletal System. (2nd Edition)* Nigg, B. M. and Herzog, W. (Eds.) Wiley and Sons, Sussex, England, pp. 226-243, 2007.
24. Judex, S., Olender, G., Whiting, W. C., and **Zernicke, R. F.** Bone biomechanics and fractures. In: *Biomechanics in Ergonomics (2nd Edition)*, Kumar, S. (ed.) Taylor & Francis, London, U. K. pp. 149-168, 2008.
25. Whiting, W. C and **Zernicke, R. F.** Lower extremity injuries. In: *Routledge Handbook of Biomechanics and Human Movement Science*. Hong, Y. and Bartlett, R. (eds.) Routledge–Taylor & Francis, Abingdon, UK, pp. 101-114, 2010.
26. **Zernicke, R. F.**, Whiting, W. C., and Manske, S. Upper extremity injuries. In: *Routledge Handbook of Biomechanics and Human Movement Science*. Hong, Y. and Bartlett, R. (eds.) Routledge–Taylor & Francis, Abingdon, UK, pp. 115-128, 2010.
27. **Zernicke, R. F.**, Wohl, G. R., and LaMothe, J. The Skeletal-Articular System. In: *Advanced Exercise Physiology (2nd Edition)*. Farrell, P. A., Joyner, M. J., and Caiozzo, V. J. (eds.) Lippincott, Williams & Wilkins, Philadelphia, PA, pp. 97-116, 2012.
28. Manske, S. L., Goulet, G. C., and **Zernicke, R. F.** The Skeletal System. In: *The History of Exercise Physiology: Part II – A Century of Discoveries*. Tipton, C. M. (ed.) Human Kinetics Publishers, Champaign, IL, pp. 557-579, 2014.

Books

1. Broer, M. R., and **Zernicke, R. F.** *Efficiency of Human Movement* (4th Edition) W. B. Saunders, Philadelphia, Pennsylvania, 1979.
2. Whiting, W. C., and **Zernicke, R. F.** *Biomechanics of Musculoskeletal Injury*. Human Kinetics Publishers, Champaign, Illinois, 1998. [Portugese Translation, 2001]
3. Whiting, W. C., and **Zernicke, R. F.** *Biomechanics of Musculoskeletal Injury* (2nd Edition) Human Kinetics Publishers, Champaign, Illinois, 2008. [Portugese Translation of 2nd Edition, 2009,

Papers Submitted / In Review

1. Tyson, N. A., LaMothe, J. M., and **Zernicke, R. F.** Exercise frequency affects murine osteogenesis. *Medicine and Science in Sports and Exercise* (Submitted).
2. Agresta, C. E., **Zernicke, R. F.**, Housner, J., Peacock, J., Goulet, G. C., and Deneweth Zendler, J. Years of running experience influences stride-to-stride fluctuations and adaptive response during step frequency perturbations in healthy distance runners. *Human Movement Science* (Submitted).
3. Burns, G., Deneweth Zendler, J. M., and **Zernicke, R. F.** Validation of a wireless shoe insole for ground reaction force measurement. *Journal of Sports Sciences* (Submitted).
4. Krieg, K., Agresta, C. E., Kuyawa, C., Housner, J., **Zernicke, R. F.**, and Deneweth Zendler, J. High training workloads are associated with injury in runners training for a half- but not full-marathon. *Journal of Science and Medicine in Sport* (Submitted)
5. Burns, G. T., Deneweth Zendler, J., and **Zernicke, R. F.** Step frequency patterns of elite ultramarathon runners during a 100-km road race. *Journal of Applied Physiology* (Submitted).

Other Media (Selected Examples)

- *Junk food doesn't just go to your hips, it gets into your bones*, *Huffington Post Living CANADA*, September 2012 http://www.huffingtonpost.ca/cy-frank/sugar-and-osteoporosis_b_1878432.html
- *Exercise and bone health*, *Oxygen Magazine*, 2010
- *Junk food doesn't just go to your hips, it gets into your bones*, *Huffpost Living CANADA*, September 2012. *Exercise for injury prevention*, Interview, *Consumer Reports–Health*, 2009.
- *Preventing Sports Injuries in Children*, KTIK Talk Radio, Boise, Idaho, Interview, 2009.
- *Youth Sport Injury Prevention*, Interview with Julie Halpern, *Michigan Today*, 2009
- *Obesity and Bone & Joint Problems*, Interview with CFCN, Calgary, Alberta, 2007
- *Obesity and Bone & Joint Problems*, Interview with Dr. Barry Dworkin (Sunday Housecall) CHUM Radio, Ottawa, Ontario, 2007
- *Alberta Hip & Knee Replacement Pilot Project Results*, Interview on QR77, Calgary, Alberta 2007
- *Alberta Hip & Knee Replacement Pilot Project Results*, QR77 Radio, Interview on “The Rutherford Show”, Calgary, Alberta, 2007
- *Obesity and Bone & Joint Problems*, QR77 Radio, Interview on “The Rutherford Show”, Calgary, Alberta, June 2007
- *Alberta slashes wait times for joint replacements – Standardized care speeds patients through the public system*; interview with Julia Cyboran, published in the *National Review of Medicine, Policy & Politics*, February 15, 2006.

Abstracts

1. **Zernicke, R. F.**, Garhammer, J. J., and Jobe, F. W. Human patellar tendon rupture: A kinetic analysis. *Medicine and Science in Sports* **8**: 75, 1976.
2. **Zernicke, R. F.**, Garhammer, J. J., and Jobe, F. W. Human patellar tendon rupture. *Orthopedics Digest* (June), p. 50, 1977.

3. **Zernicke, R. F.**, and Gregor, R. J. Independent research projects at the undergraduate level. *Proceedings of Kinesiology: A National Conference on Teaching* Dillman, C. J. and Sears, R. (eds.) University of Illinois, Champaign-Urbana, Illinois, p. 326, 1978.
4. Yagawa, J., Yee, A., **Zernicke, R. F.**, Meyer, D., and Gregor, R. J. Single concept audio-slide instructional modules. *Proceedings of Kinesiology: A National Conference on Teaching* Dillman, C. J. and Sears, R. (eds.) University of Illinois, Champaign-Urbana, Illinois, p. 284, 1978.
5. **Zernicke, R. F.**, Spector, S., Edgerton, V. R., Roy, R. R., and Gardiner, P. F. Intra-contratile dynamics of the cat soleus. *Medicine and Science in Sports* **11**: 114, 1979.
6. Whiting, W. C., and **Zernicke, R. F.** Locomotor efficiency of above-knee child amputees. *Medicine and Science in Sports* **11**: 81, 1979.
7. Smith, J. L., Betts, B., Edgerton, V. R., and **Zernicke, R. F.** Selective recruitment of fast ankle extensors. *Medicine and Science in Sports* **11**: 77, 1979.
8. Whiting, W. C., **Zernicke, R. F.**, McLaughlin, T. M., and Gregor, R. J. The recognition and correlation of human movement patterns. *Journal of Biomechanics* **13**: 193, 1980.
9. **Zernicke, R. F.**, and Roberts, E. M. Lower extremity forces and torques during systematic variation of non-weightbearing motion. *Year Book of Sports Medicine* Anderson, J. L. (ed.) Year Book Medical Publishers, Chicago, Illinois, pp. 130-131, 1979.
10. **Zernicke, R. F.**, Smith, J. L., Hoy, M. G., and Stewart, H. D. Kinetics of slow and fast ankle extensors of cat during jumping. *Journal of Biomechanics* **13**: 191, 1980.
11. Smith, J. L., Smith, L. A., Stokes, V. P., **Zernicke, R. F.**, and Sabin, C. The paw shake reflex in chronic spinal cat. *Society for Neuroscience Abstracts* **6**: 465, 1980.
12. **Zernicke, R. F.**, Smith, J. L., Hoy, M. G., and Meyerott, N. Motor capacities of the chronic spinal cat. *Journal of Biomechanics* **14**: 499-500, 1981.
13. Reback, P. A., Smith, J. L., and **Zernicke, R. F.** Biomechanics of the cat elbow in landing from jumps of various heights. *Journal of Biomechanics* **14**: 499, 1981.
14. Hoy, M. G., **Zernicke, R. F.**, and Bodine, S. Mechanical synergy of medial and lateral gastrocnemius during isometric and isotonic contractions in situ. *Journal of Biomechanics* **15**: 347, 1982.
15. **Zernicke, R. F.**, Butler, D. L., Grood, E. S., Noyes, F. R., and Hoy, M. G. Strain distributions and failure mechanisms of young human fascia and tendons. *Medicine and Science in Sports and Exercise* **14**: 130, 1982.
16. Bodine, S. C., Roy, R. R., **Zernicke, R. F.**, and Edgerton, V. R. Intracontractile length changes in the proximal and distal compartments of the semitendinosus. *Society for Neuroscience Abstracts* **8**: 948, 1982.
17. **Zernicke, R. F.**, Butler, D. L., Grood, E. S., and Noyes, F. R. Failure mechanisms and strain distributions in anterior cruciate ligaments. *International Journal of Sports Medicine Abstracts of the XXII World Congress of Sports Medicine*, Vienna, Austria, pp. 103-104, 1982.
18. Bodine, S. C., **Zernicke, R. F.**, Edgerton, V. R., Roy, R. R., and Peller, D. M. True stress and strain in mammalian skeletal muscle. *Journal of Biomechanics* **16**: 288-289, 1983.
19. Peller, D. M., Vailas, A. C., **Zernicke, R. F.**, Barnard, R. J., and Grimditch, G. Mechanical implications of rat knee meniscus morphology. *Medicine and Science in Sports and Exercise* **15**: 160, 1983.

20. Butler, D. L., Grood, E. S., **Zernicke, R. F.**, Hefzy, M. S., and Noyes, F. R. Non-uniform surface strains in young human tendons and fascia. *Transactions of the Orthopaedic Research Society* **8**: 8, 1983.
21. Hoy, M. G., **Zernicke, R. F.**, and Smith, J. L. Intersegmental dynamics of the paw shake response. *Society for Neuroscience Abstracts* **9**: 63, 1983.
22. Hoy, M. G., and **Zernicke, R. F.** Modulation of limb dynamics in the swing phase of locomotion. *Medicine and Science in Sports and Exercise* **16**: 165, 1984.
23. **Zernicke, R. F.**, Vailas, A. C., Bogey, R. A., Hart, T. J., and Shaw, S. R. Response of knee meniscus to dynamic thermomechanical stress. *Medicine and Science in Sports and Exercise* **16**: 160, 1984.
24. Koshland, G. F., Hoy, M. G., Smith, J. L., and **Zernicke, R. F.** Neuromechanical organization: The emergence of unstable limb oscillations during paw-shake responses. *Society for Neuroscience Abstracts* **10**: 339, 1984.
25. Hoy, M. G., **Zernicke, R. F.**, Smith, J. L., and Garfinkel, A. Neuromechanical organization: the emergence of stable limb oscillations during paw-shake responses. *Society for Neuroscience Abstracts* **10**: 339, 1984.
26. **Zernicke, R. F.**, Butler, D. L., and Grood, E. S. Non-uniform strain distributions in ligaments and tendons. *Proceedings of 37th Annual Conference on Engineering in Medicine and Biology* p. 271, 1984.
27. Stouffer, D.C., Butler, D. L., and **Zernicke, R. F.** Surface strains in human patellar tendon bone units. *Journal of Biomechanics* **17**: 872, 1984.
28. Hart, T. J., Cox, E. M., Hoy, M. G., Smith, J. L., and **Zernicke, R. F.** Intralimb kinetics during paw-shakes with disrupted knee motion. *Society for Neuroscience Abstracts* **11**: 882, 1985.
29. Hoy, M. G., **Zernicke, R. F.**, and Smith, J. L. The role of hip muscles during paw-shake response. *Society for Neuroscience Abstracts* **11**: 881, 1985.
30. Hoy, M. G., **Zernicke, R. F.**, and Smith, J. L. Organization of limb dynamics during rapid oscillatory movements. *Journal of Biomechanics* **19**: 470-471, 1986.
31. Matsuda, J. J., **Zernicke, R. F.**, Vailas, A. C., Pedrini, V. A., Pedrini-Mille, A., and Maynard, J. A. Biomechanical evidence for altered bone growth and maturation by strenuous exercise. *Transactions of the Orthopaedic Research Society* **11**: 430, 1986.
32. Shaw, S. R., **Zernicke, R. F.**, Vailas, A. C., deLuna, D., Thomason, D., and Baldwin, K. Mechanical, morphological, and biochemical adaptations of bone to hindlimb suspension and exercise. *Medicine and Science in Sports and Exercise* **18**: S5, 1986.
33. Schneider, K., **Zernicke, R. F.**, Schmidt, R. A., and Hart, T. J. Intersegmental dynamics during the learning of a rapid arm movement. *Journal of Biomechanics* **20**: 816, 1987.
34. Schneider, K., **Zernicke, R. F.**, and Hart, T. J. Jerk-cost during the learning of unrestrained rapid arm movements. *Journal of Biomechanics* **20**: 899, 1987.
35. Peterson, J.A., and **Zernicke, R. F.** Geometric and mechanical properties of limb bones in the lizard, *Dipsosaurus dorsalis*. *Journal of Biomechanics* **20**: 902, 1987.
36. Schneider, K., and **Zernicke, R. F.** Brain injury risk during soccer heading: experimental results and computer simulation. *Journal of Biomechanics* **20**: 817, 1987.

37. Shaw, S. R., **Zernicke, R. F.**, Vailas, A. C., and Grindeland, R. Morphological and mechanical responses of long bone to weightlessness. *Proceedings of the North American Congress on Biomechanics*, Montreal, Canada, 1986.
38. Schneider, K., **Zernicke, R. F.**, Schmidt, R. A., and Hart, T. J. Modulation of limb dynamics during the learning of rapid arm movements. *Proceedings of the North American Congress on Biomechanics*, Montreal, Canada, 1986.
39. Schneider, K., **Zernicke, R. F.**, Schmidt, R. A., and Hart, T. J. Coordination of inertial and muscular moments during the learning of rapid arm movements. *Society for Neuroscience Abstracts* **12**: 686, 1986.
40. Koshland, G. F., **Zernicke, R. F.**, Hoy, M. G., and Smith, J. L. Comparison of transient oscillatory states during paw-shake response. *Society for Neuroscience Abstracts* **12**: 686, 1986.
41. Gourde, T. D., **Zernicke, R. F.**, and Smith, J. L. Intersegmental and muscular dynamics during the swing phase of locomotion. *Society for Neuroscience Abstracts* **12**: 685, 1986.
42. Peterson, J. A., and **Zernicke, R. F.** The mechanical properties of limb bones in the lizard *anolis equestris*. *American Zoologist* **26**: 133A, 1986.
43. Schneider, K., Hart, T. J., Schmidt, R. A., and **Zernicke, R. F.** Limb dynamics during rapid arm movements. *Abstracts of XI Congress of the International Society of Biomechanics*. Amsterdam, The Netherlands, 1987.
44. Hart, T. J., Schneider, K., Schmidt, R. A., and **Zernicke, R. F.** Electromyographic correlates of limb dynamics during the learning of rapid arm movements. *Abstracts of XI Congress of the International Society of Biomechanics*. Amsterdam, The Netherlands, 1987.
45. Schneider, K., Hart, T. J., and **Zernicke, R. F.** Jerk-cost during the learning of unrestrained rapid arm movements. *Journal of Biomechanics* **20**: 899, 1987.
46. Wisleder, D., Smith, J. L., and **Zernicke, R. F.** Speed-related changes in hindlimb intersegmental dynamics during the swing phase of locomotion. *Society for Neuroscience Abstracts* **13**: 1175, 1987.
47. Loitz, B., **Zernicke, R. F.**, Salem, G., Vailas, A. C., Kody, M., and Meals, R. Effects of continuous passive motion on the mechanical properties of tendon in rabbits. In: *Abstracts of the American Physical Therapy Association*. Toronto, Canada, 1987.
48. Salem, G., **Zernicke, R. F.**, Vailas, A. C., and Martinez, D. Biomechanical and biochemical changes in lumbar vertebrae of rapidly growing rats. *Medicine and Science in Sports and Exercise* **20**: S344, 1988.
49. Smith, J. L., Buford, J. A., and **Zernicke, R. F.** Constraints during backward walking in the quadruped. *9th International Symposium on Postural and Gait Research: Development, Adaptation, and Modulation of Posture and Gait* June 1988, Marseilles, France.
50. Loitz, B. J., **Zernicke, R. F.**, Vailas, A. C., Kody, M., and Meals, R. A. Effects of short-term immobilization versus continuous passive motion on the biomechanical and biochemical properties of rabbit tendon. *Journal of Biomechanics* **21**: 880, 1988.
51. Wisleder, D., **Zernicke, R. F.**, and Smith, J. L. Speed-related changes in cat hindlimb interactive and muscular torques during the swing phase of locomotion. *Journal of Biomechanics* **21**: 854, 1988.

52. Jensen, J. L., Ulrich, B. D., Thelen, E., Schneider, K., and **Zernicke, R. F.** Posture-related changes in lower-limb intersegmental dynamics in spontaneous kicking in 3-month-old human infants. *Society for Neuroscience Abstracts* **14**: 263, 1988.
53. Schneider, K., **Zernicke, R. F.**, Ulrich, B. D., Jensen, J. L., and Thelen, E. Control of lower limb intersegmental dynamics during spontaneous kicking in 3-month-old infants. *Society for Neuroscience Abstracts* **14**: 263, 1988.
54. Buford, J. A., Smith, J. L., and **Zernicke, R. F.** Kinematics of backward and forward treadmill walking in normal cats. *Society for Neuroscience Abstracts* **14**: 261, 1988.
55. Loitz, B. J., **Zernicke, R. F.**, Vailas, A. C., Kody, M., and Meals, R. A. Effects of short-term immobilization versus continuous passive motion on the biomechanical and biochemical properties of rabbit tendon. *Transactions of the Orthopaedic Research Society* **14** , 1989.
56. Jensen, J. L., Ulrich, B. D., Thelen, E., Schneider, K., and **Zernicke, R. F.** Limb dynamics of infant kicking in supine and vertical postures. *Society for Research in Child Development Abstracts* , 1989.
57. **Zernicke, R. F.**, Vailas, A. C., Grindeland, R. E., Li, K-C., and Salem, G. J. Interactive effects of nutrition, environment, and rat-strain on cortical and vertebral bone geometry and biomechanics. *Journal of Biomechanics* **22**: 1108, 1990.
58. Hou, J. C-H., **Zernicke, R. F.**, Kody, M., and Meals, R. A. Effects of continuous passive motion on geometrical and mechanical properties of long bone. *Journal of Biomechanics* **22**: 1027, 1990.
59. Li, K-C., **Zernicke, R. F.**, and Barnard, R. J. Effects of a high-fat/high-sucrose diet on cortical bone remodeling and biomechanics. *Journal of Biomechanics* **22**: 1046, 1990.
60. Schneider, K., **Zernicke, R. F.**, Jensen, J. L., Ulrich, B. D., and Thelen, E. Posture-related modulations in limb dynamics during spontaneous kicking of infants. *Journal of Biomechanics* **22**: 1079, 1990.
61. Salem, G.J., Li, K-C., **Zernicke, R. F.**, and Barnard, R. J. Exercise-related adaptation in geometry and mechanical properties of immature rat tibia and vertebra. *Journal of Biomechanics* **22**: 1077, 1990.
62. Vailas, A. C., **Zernicke, R. F.**, Loitz, B., McCranie, K., and Martinez, D. Strenuous exercise effects on the mechanical properties and geometry of weightbearing vs nonweightbearing mature bones. *Journal of Biomechanics* **22**: 1091, 1990.
63. Buford, J.A., **Zernicke, R. F.**, and Smith, J. L. Swing-phase dynamics and EMG activity during backward quadruped walking. *Journal of Biomechanics* **22**: 993, 1990.
64. Vailas, A. C., **Zernicke, R. F.**, Grindeland, R. E. and Li, K-C. Suspension effects on morphological and mechanical properties of rat medial collateral ligament. *Medicine and Science in Sports and Exercise* **21**: S88, 1989.
65. Li, K-C., **Zernicke, R. F.** Zernicke, Barnard, R. J., and Li, A. F-Y. Insulin and exercise effects on immature diabetic rat femur-medial collateral ligament-tibia units. *Transactions of the Orthopaedic Research Society* **15**: 33, 1990.
66. Hou, J. C-H., **Zernicke, R. F.**, and Barnard, R. J. High fat-sucrose effects on femoral neck geometry and biomechanics. *Transactions of the Orthopaedic Research Society* **15**: 414, 1990.
67. **Zernicke, R. F.**, Barnard, R. J., Li, K-C., Salem, G.J., Hou, J. C-H., and Li, A. F-Y. Biomechanical and morphological response of immature cortical and trabecular bone to strenuous exercise.

Proceedings of the First IOC World Congress on Sport Sciences, Colorado Springs, Colorado, pp. 279-280, 1989.

68. Oppenheim, W., Hart, T. J., Schneider, K., **Zernicke, R. F.**, and Setoguchi, Y. Dynamics of below-knee child amputee gait. *Abstracts of the 103rd Annual Meeting of the American Orthopaedic Association*, Boston, Massachusetts, 1990.
69. Hart, T. J., Schneider, K., Oppenheim, W., **Zernicke, R. F.**, and Setoguchi, Y. Gait analysis of the Flex versus SACH foot. *Abstracts of the East/West Coast Gait Conference*, San Diego, California, 1990.
70. Loitz, B. J., and **Zernicke, R. F.** Strenuous exercise effects on in vivo bone strain. *Abstracts of the First World Congress of Biomechanics*, San Diego, California, Vol. II, p. 296, 1990.
71. Schneider, K., **Zernicke, R. F.**, and Buford, J. A. Speed-related changes in active and passive torques during human locomotion. *Abstracts of the First World Congress of Biomechanics*, San Diego, California, Vol. I, p. 131, 1990.
72. Loitz, B. J., and **Zernicke, R. F.** Strenuous exercise modulates in vivo bone strain. *Transactions of the Orthopaedic Research Society*, **16**: 10, 1991.
73. Jensen, J. L., Ulrich, B. D., Thelen, E., Schneider, K., and **Zernicke, R. F.** Intersegmental dynamics of treadmill stepping in infants and adults. *Society for Neuroscience Abstracts* **16**: 892, 1990.
74. Hou, J. C-H., **Zernicke, R. F.**, and Barnard, R. J. Effects of severe diabetes and insulin on immature rat femoral neck. *Transactions of the Orthopaedic Research Society*, Anaheim, California, **16**: 130, 1991.
75. Thelen, E., Jensen, J. L., Kamm, K., Corbetta, D., Schneider, K., and **Zernicke, R. F.** A kinematic, kinetic, and EMG analysis of the transition from spontaneous arm movements to voluntary reaching. *Abstracts of the Society for Research on Child Development* Seattle, Washington, 1991.
76. Buford, J. A., Schneider, K., and **Zernicke, R. F.** Intersegmental dynamics of the lower extremity during the swing phase of treadmill locomotion at walking and running speeds. *Abstracts of the American Physical Therapy Association*, Boston, Massachusetts, 1991.
77. Salem, G. J., **Zernicke, R. F.**, Martinez, D. A., and Vailas, A. C. Biomechanical, morphological, and biochemical adaptations of immature rat femoral neck and lumbar vertebra to moderate exercise. *Transactions of the Combined Meeting of the Orthopaedic Research Societies of USA, Japan, and Canada*, Banff, Alberta, Canada, 1991.
78. Ulrich, B. D., Jensen, J. L., Thelen, E., Schneider, K., and **Zernicke, R. F.** Control strategies for a stable movement pattern: Infant and adult treadmill steps. *NASPSPA Abstracts*, Asilomar, California, 1991.
79. Smith, J. L., Chung, S. H., Buford, J. A., and **Zernicke, R. F.** Quadrupedal gallop: The unstudied gait. *Society for Neuroscience Abstracts*, **17**: 1225, 1991.
80. Thelen, E., Corbetta, D., Konczak, J., Kamm, K., Schneider, K., and **Zernicke, R. F.** First reaches in human infants: A kinematic, kinetic, and EMG analysis. *Society for Neuroscience Abstracts*, **17**: 1225, 1991.
81. **Zernicke, R. F.**, and Salem, G. J. Moderate-exercise related adaptations in mechanics and matrix composition of immature femoral neck and lumbar vertebra. *Proceedings of the XIII Congress of the International Society of Biomechanics*, Perth, Australia, 1991.
82. **Zernicke, R. F.**, and Schneider, K. Changes in the dynamics of reaching in the first year of life. *Abstracts of the International Conference on Infant Studies*, Miami, Florida, 1992.

83. Ulrich, B. D., Jensen, J. L., Thelen, E., Schneider, K., and **Zernicke, R. F.** Control of infant and adult treadmill steps. *Abstracts of the International Conference on Infant Studies*, Miami, Florida, 1992.
84. **Zernicke, R. F.**, Barnard, R. J., Salem, G. J., and Schramm, E. Long-term effects of a high fat-sucrose diet on the morphology and biomechanics of femoral neck and lumbar vertebra. *Proceedings of the North American Congress of Biomechanics*, Chicago, p. 33, 1992.
85. **Zernicke, R. F.**, Schneider, K., and Thelen, E. Longitudinal analysis of reaching kinetics in the first year of life. *Society for Neuroscience Abstracts*, **18**: 516, 1992.
86. Oppenheim, W., Hart, T. J., Setoguchi, Y., **Zernicke, R.F.**, and Schneider, K. Dynamics of below-knee child amputee gait. *Abstracts of the Seventh World Congress of the International Society for Prosthetics and Orthotics*. Chicago, Illinois, 1992.
87. **Zernicke, R. F.**, Barnard, R. J., Salem, G. J., Woodward, J., Meduski, J. W., and Meduski, J. D. Dietary protein and exercise effects on immature femoral neck and lumbar vertebra. *Transactions of the Orthopaedic Research Society*, **18**: 152, 1993.
88. Salem, G. J., **Zernicke, R. F.**, Barnard, R. J., and Schramm, E. Long-term high fat-sucrose diet changes in femoral neck and vertebral mineral content and mechanics. *Medicine and Science in Sports and Exercise* **25**: S153, 1993.
89. Schneider, K., Hart T. J., **Zernicke, R. F.**, Setoguchi, Y., and Oppenheim, W. Below-knee child amputee gait: SACH foot versus Flex foot. *Abstracts of the European Symposium on Clinical Gait Analysis*, Zürich, Switzerland, 1992.
90. Tidball, J., Salem, G. J., and **Zernicke, R. F.** Skeletal muscle failure site and biomechanics during experimental strain injuries. *Medicine and Science in Sports and Exercise* **25**: S33, 1993.
91. Schneider, K., **Zernicke, R. F.**, and Thelen, E. Cost function analysis of infant reaching. XIV Congress of the International Society of Biomechanics, Paris, France, *Journal of Biomechanics* **27**: 740, 1994.
92. **Zernicke, R. F.**, McNitt-Gray, J., Otis, C., Loitz, B., Salem, G., and Finerman, G. Stress fracture risk assessment among elite collegiate women runners. XIVth Congress of the International Society of Biomechanics, Paris, France, *Journal of Biomechanics* **27**: 854, 1994.
93. Fowler, E.G., **Zernicke, R. F.**, Setoguchi, Y., and Oppenheim, W. Kinematic and kinetic analyses of gait in subjects with proximal femoral focal deficiency: van Nes rotation arthroplasty versus Syme amputation. East Coast Gait Conference, Mayo Clinic, Rochester, Minnesota, 1993. [also: *Proceedings of the 17th Annual Meeting, American Society of Biomechanics*, Iowa City, Iowa, pp. 167-168, 1993]
94. Loitz, B. J., and **Zernicke, R. F.** Is bone surface-strain distribution altered by exercise-induced remodeling? *Proceedings of the 17th Annual Meeting, American Society of Biomechanics*, Iowa City, Iowa, pp. 5-6, 1993.
95. Wohl, G., **Zernicke, R. F.**, Goplen, G., Ford, J., Novak, K., Hurtig, M., McPherson, R., McGann, L., and Schachar, N. Assessment of bone mechanical integrity in osteochondral grafts. *Transactions of the Orthopaedic Research Society*, **19**: 556, 1994.
96. Gross, T. S., Doschak, M. R., Bray, R. C., and **Zernicke, R. F.** Increased subchondral bone blood flow engendered by joint laxity is correlated with degraded bone mechanical properties. *Proceedings of the Second World Congress of Biomechanics*, Amsterdam, The Netherlands, Vol. II, p. 235, 1994.

97. Wohl, G., **Zernicke, R. F.**, Goplen, G., Ford, J., Novak, K., Hurtig, M., McPherson, R., McGann, L., and Schachar, N. Subchondral bone changes in osteochondral grafts—surround versus graft centre. *Transactions of the Canadian Orthopaedic Research Society*, 1994.
98. Gross, T. S., Doschak, M. R., **Zernicke, R. F.**, and Bray, R. C. Vascular adaptation may mediate subchondral bone degradation induced by joint laxity. *Transactions of the Canadian Orthopaedic Research Society*, 1994.
99. **Zernicke, R. F.**, Schneider, K., Fowler, E., Hart, T., Irvine, D., Oppenheim, W., and Setoguchi, Y. Assessing outcome efficacy in lower-limb child amputees. *Proceedings of Eighth Biennial Conference of the Canadian Society of Biomechanics*, Calgary, Canada, August 1994, pp. 46-47.
100. Gross, T. S., Doschak, M. R., Bray, R. C., and **Zernicke, R. F.** Increased bone blood flow precedes disuse induced bone loss. *Proceedings of the American Society of Biomechanics*, Columbus, Ohio, October 1994, p. 165.
101. Oppenheim, W., Fowler, E. G., **Zernicke, R. F.**, and Setoguchi, Y. Energy expenditure and kinematic analysis in proximal femoral focal deficiency: Comparison of Syme amputation with van Nes rotationplasty. *Transactions of the American Academy of Orthopaedic Surgeons*, Orlando, Florida, February 1995.
102. Wohl, G. R., Greenwald, R. A., Golub, L. M., Moak, S. A., Leng, W., and **Zernicke, R. F.** Effect of systemic anti-collagenase therapy on bone biomechanics in adjuvant arthritis. *Transactions of the Orthopaedic Research Society* **20**: 322, 1995.
103. Gross, T. S., Bray, R. C., Doschak, M. R., Wohl, G. R., and **Zernicke, R. F.** Trauma induced joint instability elevates subchondral bone blood flow while degrading bone mechanical properties. *Transactions of the Orthopaedic Research Society* **20**: 795, 1995.
104. Irvine, D., Fowler, E. G., **Zernicke, R. F.**, Setoguchi, Y., and Oppenheim, W. Kinetic analysis of preferred and fast cadences in proximal femoral focal deficiency. *Proceedings of the 18th American Society of Biomechanics Annual Meeting*, Columbus, OH, 1994, p. 151.
105. Muldrew, K. B., Novak, K. A., **Zernicke, R. F.**, McGann, L. E., and Schachar, N. S. Chondrocytes of the intermediate zone are sensitive to cryoprotectant toxicity. *Transactions of the Canadian Orthopaedic Research Society*, 1995.
106. Ajemian, S. V., Richards, D. P., Wiley, P., and **Zernicke, R. F.** Jump dynamics predict patellar tendon pain in elite volleyball players. *Proceedings of the Annual Symposium of the Canadian Academy of Sport Medicine*, Banff, Alberta, 1995.
107. Wohl, G., Novak, K., McGann, L., Schachar, N., and **Zernicke, R. F.** Correlation of subchondral bone and articular cartilage mechanical properties in the ovine femur. *Transactions of the Combined Orthopaedic Research Societies Meeting*, 1995, San Diego, California, p.7.
108. Schachar, N. S., Muldrew, K. B., Novak, K. A., Hurtig, M. B., McPherson, R. W., **Zernicke, R. F.**, and McGann, L. E. Cryopreserved osteochondral dowel allografts for the repair of focal defects of the medial femoral condyle: A biomechanical, biochemical, and histological evaluation in an ovine model. *Transactions of the Combined Orthopaedic Research Societies Meeting*, 1995, San Diego, California, p.38.
109. Gross, T. S., Bray, R. C., and **Zernicke, R. F.** Bone blood flow is elevated prior to osteoclastic activity initiated by disuse osteopenia. *Proceedings of the 19th American Society of Biomechanics Annual Meeting*, Stanford, California, 1995, pp. 31-32.

110. Judex, S., Gross, T. S., and **Zernicke, R. F.** Changes in circumferential strain gradients during locomotion. *Proceedings of the 19th American Society of Biomechanics Annual Meeting*, Stanford, California, 1995, pp. 53-54.
111. **Zernicke, R. F.**, Gross, T. S., and Judex, S. Functional adaptation of bone to physiological and mechanical stimuli. *Proceedings of the XV Congress of the International Society of Biomechanics*, Jyväskylä, Finland, 1995, pp. 10-11.
112. Gross, T. S., Damjii, A. A., Bray, R. C., and **Zernicke, R. F.** Osteoclastic activity initiated by disuse osteopenia is preceded by highly elevated tissue flow. *Transactions of the Orthopaedic Research Society*, Atlanta, Georgia, 1996.
113. Judex, S., Gross, T. S., and **Zernicke, R. F.** In vivo quantification of mechanical parameters that may affect bone fluid flow. *Transactions of the Orthopaedic Research Society*, Atlanta, Georgia, 1996.
114. Schachar, N. S., Vellet, A. D., Novak, K. A., Didito, L. J., Muldrew, K. B. Wohl, G., **Zernicke, R. F.**, and McGann, L. E. Magnetic resonance imaging (MRI) as a non-invasive assessment of osteochondral dowel allograft outcomes: A pilot study in sheep. *Transactions of the Orthopaedic Research Society*, Atlanta, Georgia, 1996.
115. Jomha, N. M., Cundal, C., Lavoie, G., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Cryopreservation of intact human articular cartilage. *Transactions of the Canadian Orthopaedic Research Society*, Quebec City, 1996.
116. Novak, K., Schachar, N. S., Vellet, D., Vidito, L., Muldrew, K., Wohl, G., **Zernicke, R. F.**, and McGann, L. E. Magnetic resonance imaging (MRI) as a non-invasive assessment of osteochondral dowel allograft outcomes. *Transactions of the Canadian Orthopaedic Research Society*, Quebec City, 1996.
117. Wohl, G., Novak, K., Muldrew, K., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Inter-related behaviours of subchondral bone and articular cartilage in the ovine proximal tibia. *Transactions of the Canadian Orthopaedic Research Society*, Quebec City, 1996.
118. Watkins, B. A., Seifert, M. F., Allen, K., Wohl, G. R., and **Zernicke, R. F.** Importance of dietary fat in modulating PGE₂ responses on morphometry and mechanical properties of bone. *Transactions of the Third International Conference on Nutrition and Fitness*, Athens, Greece, May, 1996.
119. Judex, S., Gross, T. S., and **Zernicke, R. F.** Strain gradients predict sites of exercise-stimulated periosteal bone formation in the adult skeleton. *Transactions of the American Society for Bone and Mineral Research*, Seattle, Washington, 1996.
120. Wohl, G. R., Loehrke, L., Watkins, B. A., and **Zernicke, R. F.** High- and low-fat diet effects on structure and mechanics of mature bone. *Proceedings of the Canadian Society of Biomechanics*, **9**: 380-381, 1996.
121. Judex, S., Gross, T. S., and **Zernicke, R. F.** Locomotion-induced circumferential strain gradients predict periosteal bone formation. *Transactions of the Canadian Society of Biomechanics*, **9**: 388-389, 1996.
122. Gross, T. S., Bray, R. C., and **Zernicke, R. F.** Bone hyperemia as an initiator of bone resorption. *Transactions of the American Society of Biomechanics*, Atlanta, Georgia, 1996.
123. Gross, T. S., Bray, R. C., and **Zernicke, R. F.** Osteoclastic resorption initiated by disuse is temporally preceded by bone hyperemia. *Transactions of the American Society for Bone and Mineral Research*, Seattle, Washington, 1996.

124. Wohl, G. R., Novak, K., Muldrew, K. B., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Inter-related behaviours of subchondral bone and articular cartilage in the ovine knee. *Transactions of the Society for Physical Regulation in Biology and Medicine*, Chicago, Illinois, 1996.
125. Gross, T. S., Edwards, J. L., McLeod, K. J., Rubin, C. T., and **Zernicke, R. F.** Correlation of site-specific bone formation with strain gradients and strain energy density. *Transactions of the Orthopaedic Research Society*, San Francisco, California, 1997.
126. Banes, A. J., Horesovsky, G., Noel, S., Judex, S., Archambault, J., **Zernicke, R. F.**, Herzog, W., and Miller L. Mechanical load stimulates expression of novel genes *in vivo* and *in vitro* in avian flexor tendon cells. *Transactions of the Orthopaedic Research Society*, San Francisco, California, 1997.
127. Wohl, G. R., Chan, R. C-C., Kloiber, R., Adams, M. A., Matyas, J. R., and **Zernicke, R. F.**, Cancellous bone changes in the early stages of experimental osteoarthritis. *Transactions of the Orthopaedic Research Society*, San Francisco, California, 1997.
128. Judex, S., Gross, T. S., and **Zernicke, R. F.**, Strain gradients effects in exercise induced new bone formation. *Transactions of the Orthopaedic Research Society*, San Francisco, California, 1997.
129. Ajemian, S., Thon, D., Kaul, L., Clare, P., Hughes, G., and **Zernicke, R. F.** Gait changes following total hip replacement. *Gait & Posture—Abstracts of the North American Society of Gait and Clinical Movement Analysis Annual Meeting*. Chicago, Illinois, 1997.
130. Wohl, G. R., Chan, R. C., Kloiber, R., Adams, M. E., Matyas, J. R., and **Zernicke, R. F.** Knee and hip periarticular osteopenia after transection of anterior cruciate ligament. *Abstracts of the Canadian Orthopaedic Research Society Meeting*, Hamilton, Ontario, 1997.
131. Wohl, G. R., Chan, R. C., Kloiber, R., Adams, M. E., Matyas, J. R., and **Zernicke, R. F.** Changes in periarticular bone mineral density following anterior cruciate ligament transection. *Abstracts of the XVI Congress of the International Society of Biomechanics*, Tokyo, Japan, p. 412, 1997.
132. Judex, S., Wilson, A. N., and **Zernicke, R. F.** Influence of shear strains on exercise stimulated new bone formation. *Proceedings ASME Bioengineering Conference*, Sun River, Oregon, BED **35**: 169-170, 1997.
133. Ronsky, J. L., Dansereau, J., Delorme, S., Dudley, R., Harder, J., Dewar, R., Clynch, G., Ferguson, K., Gu, P., Labelle, H., Poncet, P., and **Zernicke, R. F.** Assessing scoliosis with laser imaging and neural networks. *Proceedings 3rd Annual Child Health Research Symposium*, Calgary Alberta, 1997.
134. Delorme, S., Dudley, R., Ronsky, J. L., Dansereau, J., Harder, J., Dewar, R., Labelle, H., and **Zernicke, R. F.** Reconstructions of laser-scanned 3D torso topography and stereo-radiographic spine and rib-cage geometry in scoliosis. *Proceedings Canadian Medical and Biological Engineering Society*, Toronto, Ontario, 1997.
135. Judex, S., Schaaff, F. G., and **Zernicke, R. F.** Growing bone and exercise: Site specific analysis of mid diaphyseal geometry. *Proceedings American Society for Bone and Mineral Research*, Cincinnati, Ohio, 1997.
136. Joughin, V.E., Fick, G. H., **Zernicke, R. F.**, Ronsky, J. L., Bray, R. C., Harrison, E., Nigg, B. M., and Boag, G. A survey of knee pain and biomechanical alignment in female teenagers. *Proceedings 3rd Annual Child Health Research Symposium*, Calgary Alberta, 1997.
137. Chan, R. C., McDougall, J. J., Forrester, K., Yeung, G. W., Bray, R. C., and **Zernicke, R. F.** Assessment of bone blood flow by laser Doppler perfusion imaging. *Transactions of the Orthopaedic Research Society*, New Orleans, Louisiana, 1998.

138. Wohl, G. R., Chan, R. C., McGuinness, B. A., Matyas, J. R., Adams, M. E., Kloiber, R., and **Zernicke, R. F.** Cancellous bone mechanical properties in the contralateral knee are similar to normal control in canine experimental osteoarthritis. *Transactions of the Orthopaedic Research Society*, New Orleans, Louisiana, 1998.
139. Powers, M. J., Powell, J., Ronsky, J. L., and **Zernicke, R. F.** Gait abnormalities in patients with tibial malrotation. *Abstracts of the North American Society for Gait and Clinical Motion Analysis*, San Diego, California, 1998.
140. Doschak, M. R., Butterwick, D. J., **Zernicke, R. F.**, and Bray, R. C. Protracted meniscal hyperaemia as a prognostic indicator for the pathogenesis of early osteoarthritis. *Transactions of the Canadian Orthopaedic Research Society*, Ottawa, Ontario, 1998.
141. Powers, M. J., Murray, P., Taylor, C., Powell, J., **Zernicke, R. F.**, and Ronsky, J. L. Effects of tibial malrotation on gait. *Transactions of the Canadian Orthopaedic Research Society*, Ottawa, Ontario, 1998.
142. Chan, R. C., Forrester, K. R., McGuinness, B. A., Bray, R. C., and **Zernicke, R. F.** Optical properties and penetration depth in bone measured by laser Doppler perfusion imaging. *Transactions of the Canadian Orthopaedic Research Society*, Ottawa, Ontario, 1998.
143. Richards, D., Ajemian, S., Wiley, P., and **Zernicke, R. F.** Relation between ankle joint dynamics and patellar tendinitis in elite volleyball players. *Transactions of the Canadian Academy of Sports Medicine*, Waterloo, Ontario, 1999.
144. Doschak, M. R., **Zernicke, R. F.**, and Bray, R. C. Meniscal hyperaemia following ACL-disruption. *Transactions of the Combined Orthopaedic Research Societies (USA, Canada, Europe & Japan)*, Hamamatsu, Japan, 1998.
145. Wohl, G. R., Chan, R. C., McGuinness, B. A., Matyas, J. R., Adams, M. E., Kloiber, R., and **Zernicke, R. F.** Changes in cancellous bone mechanical properties in the early stages of canine experimental osteoarthritis. *Transactions of the 24th Canadian Medical and Biological Engineering Conference*, Edmonton, AB, 1998.
146. Poncet, P., Delorme, S., Dudley, R., Ronsky, J. L., Dansereau, J., Harder, J., Dewar, R. D., Labelle, H., and **Zernicke, R. F.** 3-D reconstructions of the external and internal geometries of the trunk using laser and stereo-radiographic imaging techniques. *Transactions of the International Research Society of Spinal Deformities*. Burlington, VT, 1998.
147. Poncet, P., Ronsky, J. L., Dudley, R., Delorme, S., Dansereau, J., Harder, J., Dewar, R. D., Labelle, H., and **Zernicke, R. F.** Reconstruction of laser-scanned 3D torso topography and stereo-radiographic spine and rib-cage geometry in scoliosis. *Transactions of the Canadian Orthopaedic Research Society*, Ottawa, ON, 1998.
148. Joughin, V. E., Powers, M. J., Davies, T. C., Hardin, E. C., Fick, G. H., Boag, G., **Zernicke, R. F.**, and Ronsky, J. L. Femoral antetorsion and gait in adolescent females. *Transactions of the North American Congress on Biomechanics*, Waterloo, Ontario, 1998.
149. Joughin, V. E., Hardin, E. C., Davies, T. C., Powers, M. J., Boag, G., **Zernicke, R. F.**, and Ronsky, J. L. Determination of femoral anteversion using clinical methods, CT, and ultrasound. *4th Annual Child Health Research Symposium*, Calgary, AB, 1998.
150. Boyd, S. K., Wohl, G. R., Matyas, J. R., Kantzas, A., and **Zernicke, R. F.** Changes in femoral bone mineral density in ACL deficient dogs using quantitative computed tomography. *Transactions of the North American Congress on Biomechanics*, Waterloo, Ontario, 1998.

151. Judex, S. and **Zernicke, R. F.** Sensitivity of adult cortical bone to calcium deficiency and glucocorticoid excess. *Transactions of the Combined Meeting: American Society for Bone and Mineral Research and International Bone and Mineral Society, Bone: 5S*, S436, 1998.
152. Srinivasan, S., Keilin, S. A., Bray, R. C., **Zernicke, R. F.**, and Gross, T. S. An in vivo model of age induced osteopenia. *Transactions of the American Society for Bone and Mineral Research*, 1998.
153. Judex, S., and **Zernicke, R. F.** High-impact exercise and growing bone—changes in bone's mechanical milieu induced by jumping. *Proceedings of the 1999 ASME Bioengineering Conference*, Big Sky, MO, BED **42**: 577-578, 1999.
154. Wohl, G. R., Muldrew, K., Novak, K., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Biomechanical behaviour of cartilage on osteochondral allografts following controlled cryopreservation compared to unprotected freezing up to one year after transplantation. *Transactions of the Canadian Orthopaedic Research Society*, 1999.
155. Tardif, N., Dansereau, J., Delorme, S., **Zernicke, R. F.**, Ronsky, J., Poncet, P., and Labelle, H. Evaluation of two 3D imaging techniques of the study of scoliotic deformities: Laser scanning of the external surface of the trunk and stereoradiographic reconstruction of the spine and rib cage. *Proceedings of the Congress of the International Society of Biomechanics*, Calgary, Alberta, 1999.
156. Scovil, C. Y., Wright, I. C., Ronsky, J. L., **Zernicke, R. F.**, and Powell, J. N. Quantification of the effects of the angle of tibial malrotation on ground reaction forces and joint moments using a forward dynamics model. *Proceedings of the Congress of the International Society of Biomechanics*, Calgary, Alberta, 1999.
157. Boyd, S. K., Mueller, R. Z., Wohl, G. R., Matyas, J. R., and **Zernicke, R. F.** Anisotropic fabric changes of periarticular cancellous bone in a canine model of knee osteoarthritis quantified using micro computer tomography. *Proceedings of the Congress of the International Society of Biomechanics*, Calgary, Alberta, 1999.
158. Wohl, G. R., Spaeth, M., Katz, N., Matyas, J. R., and **Zernicke, R. F.** Changes in proximal femoral neck bone mineral density and mechanical properties following knee anterior cruciate ligament transection. *Proceedings of the Congress of the International Society of Biomechanics*, Calgary, Alberta, 1999.
159. Jaremko, J., Delorme, S., Dansereau, J., Labelle, H., Ronsky, J., Poncet, P., Harder, J., Dewar, R., and **Zernicke, R. F.** Using neural networks to correlate spine and rib deformity in scoliosis. *Proceedings of the Congress of the International Society of Biomechanics*, Calgary, Alberta, 1999.
160. Davies, T. C., Kiefer, G., and **Zernicke, R. F.** Hindfoot and forefoot biomechanics of children with clubfoot. *Proceedings of the Congress of the International Society of Biomechanics*, Calgary, Alberta, 1999.
161. Davies, T. C., Kiefer, G., and **Zernicke, R. F.** Dorsiflexion of clubfoot patients as compared to normal subjects measured with a motion analysis system. *Abstracts of the 5th Annual Child Health Research Symposium*, Alberta Children's Hospital, Calgary, AB, 1999.
162. Judex, S., and **Zernicke, R. F.** Large strain rates induced by high-impact exercise stimulate bone growth. *21st Annual Meeting of the American Society of Bone and Mineral Research*, 1999 (*Journal of Bone and Mineral Research* 14(S1), S281, 1999).
163. Richards, D., Ajemian, S., Wiley, P., Brunet, J. A., and **Zernicke, R. F.** Relation between ankle joint dynamics and patellar tendinitis in elite volleyball players. *American Orthopaedic Foot and Ankle Society*, Puerto Rico, 1999.

164. Richards, D., Ajemian, S., Wiley, P., Brunet, J. A., and **Zernicke, R. F.** Ankle joint dynamics during jumping and their relation to patellar tendinitis. *Transactions of the International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sport Medicine*, Washington, DC, 1999.
165. Shymkiw, R. C., Boyd, S. K., Hamilton, K., Kantzas, A., Bray, R. C., and **Zernicke, R. F.** Physiological and mechanical adaptation of periarticular cancellous bone after joint ligament injury. *Transactions of American Society of Bone and Mineral Research*, St. Louis, MO, 1999.
166. Scovill, C. Y., Ronsky, J. L., **Zernicke, R. F.**, Wright, I. C., and Powell, J. N. Comparison of the effects of tibial malrotation on experimental and predicted gait characteristics. *Transactions of the Annual Meeting of the North American Society for Clinical Gait and Motion Analysis*. Rochester, MN, 2000.
167. Scovill, C. Y., Ronsky, J. L., **Zernicke, R. F.**, and Wright, I. C. Modelling alteration in joint moments associated with tibial malrotation. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 48.
168. Shymkiw, R. C. Boyd, S. K., Kantzas, A., Bray, R. C., and **Zernicke, R. F.** Physiological and mechanical adaptation of periarticular cancellous bone after joint ligament injury. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 53.
169. Wohl, G. R., Muldrew, K. B., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Bone cell survival following controlled freezing assessed with the Alamar Blue assay. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 53.
170. Muldrew, K., Blote, K., McGann, L. E., **Zernicke, R. F.**, and Schachar, N. S. Ice growth and morphology in articular cartilage. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 56.
171. Muldrew, K., Blote, K., McGann, L. E., **Zernicke, R. F.**, and Schachar, N. S. Hypothermic storage of articular cartilage for transplantation. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 66.
172. Poncet, P., Ronsky, J. L., Dansereau, J., and **Zernicke, R. F.** Assessment of subject motion in a torso positioning device for scoliosis measurement. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 61.
173. Ronsky, J. L., Loitz-Ramage, B., Powell, J. N., Taylor, C., and **Zernicke, R. F.** Hip-knee angle-angle diagrams during gait as outcome measures of the surgical correction. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 57.
174. Jaremko, J., Poncet, P., Ronsky, J. R., and **Zernicke, R. F.** Quantification of three-dimensional torso contours and centroid to assess trunk deformity. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 60.
175. Tardif, N., Poncet, P., Ronsky, J. L., Dansereau, J., and **Zernicke, R. F.** Evaluation of a laser (optical) imaging technique for torso asymmetry measurement in scoliosis. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 70.
176. Boyd, S. K., Mueller, R., Matyas, J., Wohl, G. R., and **Zernicke, R. F.** Trabecular connectivity of peri-articular cancellous bone in a canine model for knee osteoarthritis. *Transactions of the Canadian Orthopaedic Research Society*, Edmonton, AB, 2000, p. 66.
177. Jaremko, J., Poncet, P., Ronsky, J. R., and **Zernicke, R. F.** Estimation of vertebral levels from torso surface data. *Transactions of the Combined Conference Societe de Biomechanique and Canadian Society for Biomechanics*, Montreal, PQ, August 2000, p. 198 (also *Archives of Physiology and Biochemistry*, 108: 198, 2000).

178. Poncet, P., Ronsky, J. R., Dansereau, J., and **Zernicke, R. F.** Assessment of subject motion in a trunk positioning apparatus for scoliosis measurement. *Transactions of the Combined Conference Societe de Biomecanique and Canadian Society for Biomechanics*, Montreal, PQ, August 2000, p. 24 (also *Archives of Physiology and Biochemistry*, 108: 24, 2000).
179. Tardif, N., Poncet, P., Ronsky, J. R., Dansereau, J., and **Zernicke, R. F.** Evaluation of an integrated laser imaging /x-ray technique for torso asymmetry measurement in scoliosis. *Transactions of the Combined Conference Societe de Biomecanique and Canadian Society for Biomechanics*, Montreal, PQ, August 2000, p. 200 (also *Archives of Physiology and Biochemistry*, 108: 200, 2000).
180. Wohl, G. R., Boyd, S. K., Judex, S., and **Zernicke, R. F.** Functional adaptation of bone. *Transactions of Pre-Olympic Congress on Sport and Exercise Science*, Brisbane, Australia, September 2000, p. 237.
181. Boyd, S. K., Mueller, R., Matyas, J., Wohl, G. R., and **Zernicke, R. F.** Periarticular cancellous bone trabecular connectivity in experimental post-traumatic osteoarthritis. *Transactions of Pre-Olympic Congress on Sport and Exercise Science*, Brisbane, Australia, September 2000, p. 89.
182. Wohl, G. R., Boyd, S. K., Judex, S., and **Zernicke, R. F.** Factors in skeletal adaptation. *Transactions of the Combined Conference Societe de Biomecanique and Canadian Society for Biomechanics*, Montreal, PQ, August 2000, p. 57 (also *Archives of Physiology and Biochemistry*, 108: 57, 2000).
183. Loitz-Ramage, B., Ronsky, J., Gildenhuys, A., Maurer, J., Breen, T., Yang, T., and **Zernicke, R. F.** Epidural analgesia with ropivacaine and bupivacaine: Centre of pressure analysis of stability. *Transactions of the Combined Conference Societe de Biomecanique and Canadian Society for Biomechanics*, Montreal, PQ, August 2000, p. 39 (also *Archives of Physiology and Biochemistry*, 108: 39, 2000).
184. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Neural-network detection of thoracic curve severity in scoliosis. *Transactions of the Congress of the International Society of Biomechanics*, Zürich, Switzerland, July 2001.
185. Boyd, S. K., Müller, R., and **Zernicke, R. F.** Apparent bone modulus but not trabecular tissue modulus changes with early experimental osteoarthritis. *Transactions of the Congress of the International Society of Biomechanics*, Zürich, Switzerland, July 2001.
186. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Detection of thoracic curve severity from torso surface scans. *Transactions of the Fourth Combined Meeting of the Orthopaedic Research Societies of the USA, Canada, Europe, and Japan*. Rhodes, Greece, June 2001.
187. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Prediction of spinal deformity in scoliosis from torso surface cross sections. *Transactions of 47th Annual Meeting of the Orthopaedic Research Society*. San Francisco, California, February 2001.
188. Boyd, S., Müller, R., and **Zernicke, R. F.** Mechanical and architectural bone adaptation in early experimental osteoarthritis. *Transactions of Biomechanica IV*, Davos, Switzerland, July 2001 (*Journal of Biomechanics* **34**: S34-S35, 2001).
189. Boyd, S., Müller, R., and **Zernicke, R. F.** Mechanical and architectural bone adaptation in early-stage experimental osteoarthritis. *Transactions of American Society for Bone and Mineral Research*, Phoenix, Arizona, October 2001.
190. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Estimation of spinal deformity from torso asymmetry in scoliosis using a genetic-algorithm.

neural-network approach. *Transactions of Fifth International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*. Rome, Italy, October 2001.

191. Jaremko, J. L., Poncet, P., and **Zernicke, R. F.** Neural network estimation of scoliosis from torso asymmetry. *Transactions of Candian Society for Clinical Investigation*. Ottawa, Ontario, September 2001.
192. Boyd, S., Müller, R., and **Zernicke, R. F.** Role of tissue modulus in mechanical bone adptation in early experimental osteoarthritis. *Transactions of the 48th Annual Meeting of the Orthopaedic Research Society*, Dallas, Texas, February 2002.
193. Doschak, M. R., Bray, R. C., Hanley, D. A., and **Zernicke, R. F.** Pharmacological mediation of periarticular bone remodeling and angiogenesis in osteoarthritis. *Transactions of the 2001 Merck-Frosst Research Conference*. Kirkland, Quebec, October 2001. [**Outstanding Research Award**]
194. Poncet, P., Jaremko, J., Ronsky, J. L., Harder, J., Labelle, H., Dansereau, J., and **Zernicke, R. F.** Prediction of spinal deformity in scoliosis from geometric torsion. *Transactions of the International Research Society of Spinal Deformities*. Athens, Greece, 2002.
195. Wohl, G. R., Muldrew, K. B., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Incorporation of bone in transplanted osteochondral allografts. *Transactions of the Canadian Orthopaedic Research Society*, Victoria, British Columbia, June 2002.
196. Wohl, G. R., Muldrew, K. B., McGann, L. E., Schachar, N. S., and **Zernicke, R. F.** Bone incorporation in transplanted osteochondral allografts. *Transactions of the Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2001.
197. Ukrainetz, P., Wohl, G. R., Pardy, C., Sawers, A., and **Zernicke, R. F.** Hibernating black bears maintain bone mass. *Transactions of the Canadian Orthopaedic Research Society*, Victoria, British Columbia, June 2002.
198. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Cobb angle estimation by 3-D spinal reconstruction and by neural-network analysis of torso surface asymmetry. *Transactions of the Canadian Orthopaedic Research Society*, Victoria, British Columbia, June 2002.
199. Jaremko, J. L., Poncet, P., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Grouping of scoliosis patients by spinal curve severity from torso suface data. *Transactions of the IVth World Congress of Biomechanics*, Calgary, Alberta, August 2002.
200. Wu, H., D. Xue, Harder, J., Ronsky, J. L., Poncet, P., Jaremko, J., Clynych, G., and **Zernicke, R. F.** Design and manufacturing of customized braces for scoliosis treatment. *Proceedings of ASME Computer and Information in Engineering Conference*, 2002.
201. Grant, J. A., **Zernicke, R. F.**, and Mohtadi, N. G. H. Relation between knee range of motion measured passively and during gait in anterior cruciate ligament deficient and reconstructed individuals. *Transactions of the IVth World Congress of Biomechanics*, Calgary, Alberta, August 2002.
202. Grant, J. A., Mohtadi, N. G. H., Bell, G. D., Bray, R. C., Frank, C. B., and **Zernicke, R. F.** Comparison of home vs. physiotherapy-supervised rehabilitation programs following ACL reconstruction. *Transactions of the Canadian Academy of Sports Medicine*, Mont Tremblant, Quebec, 2002.
203. Alvarez, M., Ronsky, J. L., Aggarawala, R., Harder, J., and **Zernicke, R. F.** Socket comfort and perceived functional ability in unilateral transtibial amputee patients using plaster-casted and

CAD/CAM manufactured sockets. *Transactions of the IVth World Congress of Biomechanics*, Calgary, Alberta, August 2002.

204. Poncet, P., Jaremko, J. L., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Estimation of spinal deformity in scoliosis from geometric torsion. *Transactions of the IVth World Congress of Biomechanics*, Calgary, Alberta, August 2002.
205. Ronsky, J. L., Loitz-Ramage, B., Scovil, C., Guildenhuys, A., Maurer, J., Good, C., and **Zernicke, R. F.** Locomotion research within an orthopaedics framework: Successes and challenges. *Transactions of the IVth World Congress of Biomechanics*, Calgary, Alberta, August 2002.
206. Doschak, M. R., Wohl, G. R., Hanley, D. A., Bray, R. C., and **Zernicke, R. F.** Risedronate conserves periarticular bone and ligament mechanical properties in early osteoarthritis. *Transactions of American Society for Bone and Mineral Research*, San Antonio, Texas, September 2002.
207. Grant, J. A., Mohtadi, N. G., and **Zernicke, R. F.** Comparison of home versus physiotherapy-supervised rehabilitation programs following reconstruction of the anterior cruciate ligament (ACL): A randomized clinical trial. *Clinical and Investigative Medicine* **25**: 152, 2002.
208. LaMothe, L., Doschak, M. R., Matyas, J., Bray, R. C., and **Zernicke, R. F.** Medial collateral ligament insertional changes (μ CT) after anterior cruciate ligament deficiency. *Transactions of American Society for Bone and Mineral Research*, San Antonio, Texas, September 2002.
209. Doschak, M. R., LaMothe, J. M., Hanley, D. A., Matyas, J. R., **Zernicke, R. F.**, and Bray, R. C. Antiresorptive therapy conserves medial collateral ligament insertional morphology after anterior cruciate ligament deficiency. *Transactions of Orthopaedic Research Society*, New Orleans, Louisiana, February 2003.
210. Jaremko, J. L., Hill, D., Moreau, M., and **Zernicke, R. F.** Back surface assessment of scoliosis severity by neural network. *Transactions of Canadian Orthopaedic Research Society*, Winnipeg, Manitoba, October 2003.
211. Wohl, G. R., Muldrew, K. B., Schachar, N. S., McGann, L. E., and **Zernicke, R. F.** Morphological changes in periarticular cancellous bone after transplantation of osteochondral autografts and allografts. *Transactions of Canadian Orthopaedic Research Society*, Winnipeg, Manitoba, October 2003.
212. Loitz-Ramage, B., Schneider, P. S., Ronsky, J. L., **Zernicke, R. F.**, Breen T. Kinetic and kinematic analysis during gait following epidural analgesia. *Transactions of Canadian Orthopaedic Research Society*, Winnipeg, Manitoba, October 2003.
213. Poncet, P., Jaremko, J., Ronsky, J. L., Harder, J., Dansereau, J., Labelle, H., and **Zernicke, R. F.** Three dimensional torso shape analysis of scoliotic subjects pre- and post-surgery. *Transactions of Canadian Orthopaedic Research Society*, Winnipeg, Manitoba, October 2003.
214. Doschak, M. R., LaMothe, J. M., Cooper, D. M., Hanley, D. A., Hallgrimsson, B., Bray, R. C., and **Zernicke, R. F.** Bisphosphonates reduce bone loss at ligament insertions after joint injury. *Transactions of the World Congress on Osteoarthritis*, Berlin, Germany, October 2003.
215. **Zernicke, R. F.**, Wohl, G. R., and LaMothe, J. M. Adaptation of bone to exercise and injury. *Transactions of European College of Sport Sciences*, Salzburg, Austria, July 2003.
216. LaMothe, J. M. and **Zernicke, R. F.** Strain rate directs bone adaptation. *Transactions of the Congress of the International Society of Biomechanics*, Dunedin, New Zealand, July 2003. (ISB Young Investigator Award, 2003)

217. LaMothe, J. M., Hepple, R. T., and **Zernicke, R. F.** Age and caloric restriction affect axial and appendicular bone morphology and mechanics differently. *Transactions of the Congress of the International Society of Biomechanics*, Dunedin, New Zealand, July 2003.
218. Schneider, P. S., Wakeling, J. M., Loitz-Ramage, B. J., **Zernicke, R. F.**, Ronsky, J. L. Time frequency analysis of myoelectric signals from children with cerebral palsy: A new muscular contraction assessment technique. *Transactions of the Congress of the International Society of Biomechanics*, Dunedin, New Zealand, July 2003.
219. Schneider, P. S., Loitz-Ramage, B. J., Yang, T., **Zernicke, R. F.**, Breen, T., and Ronsky, J. L. Controlling centre of mass momentum in sit-to-stand following epidural analgesia infusion. *Transactions of the Congress of the International Society of Biomechanics*, Dunedin, New Zealand, July 2003.
220. Grant, J. A., Mohtadi, N. G., and **Zernicke, R. F.** A comparison of home vs. physiotherapy-supervised rehabilitation programs following reconstruction of the anterior cruciate ligament. *Annual Meeting, American College of Sports Medicine*, San Francisco, CA, May 2003.
221. Maurer, J., Anderson, M., Loitz-Ramage, B., **Zernicke, R. F.**, and Ronsky, J. L. Prosthetic socket interface pressures: Customized calibration technique for the Tekscan F-socket system. *Transactions American Society of Mechanical Engineering: Bioengineering Conference*, Key Biscayne, FL, June 2003.
222. Schneider, P.S., Loitz-Ramage, B.J., Ronsky, J.L., **Zernicke, R.F.**, and Breen, T. Kinetic and kinematic analysis during gait following epidural analgesia. *Transactions of Canadian Orthopaedic Research Society*. Winnipeg, Manitoba, October 2003.
223. Schneider, P. S., Wakeling, J. M., Loitz-Ramage, **Zernicke, R. F.**, and Ronsky, J. Time frequency analysis of myoelectric signals from children with cerebral palsy: A muscular inter-step variability assessment technique. *Proceedings of the Children Health Symposium*, Alberta Children's Hospital, Calgary, Alberta, April 2003.
224. Robu, D., Poncet, P., **Zernicke, R. F.**, and Ronsky, J. L. Optical imaging and stereo radiography for assessment of scoliosis. *Transactions GEOIDE National Conference*, Victoria, British Columbia, June 2003.
225. LaMothe, J. and **Zernicke, R. F.** Strain rate influences periosteal bone formation. *Transactions Canadian Connective Tissue Conference*, Montreal, Quebec, July 2003.
226. LaMothe, J. and **Zernicke, R. F.** Higher strain rates are associated with higher bone formation rates. *Transactions of 5th International Bone Fluid Flow Workshop*, Cleveland, Ohio, September 2003.
227. LaMothe, J., Peters, G., Gross, T. S., and Srinivasan, S., and **Zernicke, R. F.** Rest-insertion augments periosteal bone formation rates in response to short-term high-frequency loading. *Transactions of the American Society for Bone and Mineral Research*, Minneapolis, Minnesota, September 2003.
228. Monteleone, B. and **Zernicke, R. F.** Effects of functional instability on ankle joint complex dynamics and motor control during a lateral hop movement. *1st Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2003.
229. LaMothe, J. and **Zernicke, R. F.** Higher strain rates are associated with higher bone formation rates. *1st Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2003.

230. Grant, J. and **Zernicke, R. F.** Comparison of home vs. physiotherapy-supervised rehabilitation programs following reconstruction of the anterior cruciate ligament. *1st Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2003.
231. LaMothe, J. and **Zernicke, R. F.** Mechanotransduction: Higher strain rates are more osteogenic. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
232. Pardy, C., Wohl, J. R., Boyd, S. K., Matyas, J. M. and **Zernicke, R. F.** Effect of doxycycline on the mechanical and morphometric properties of osteoarthritis bone. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
233. LaMothe, J. and **Zernicke, R. F.** Mechanotransduction: Higher strain rates are more osteogenic. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
234. Robu D., Poncet, P., Fjeld, L., **Zernicke, R. F.**, and Ronsky, J. L. 3D reconstruction of scoliotic human torso using optical imaging techniques and stereo-radiography. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
235. Hamilton, N. and **Zernicke, R. F.** Virtual fluid flow in bone. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
236. Wu, H., Ronsky, J. L., Harder, J., Fjeld, I., Poncet, P. and **Zernicke, R. F.** Geometric modeling and prototyping of custom braces for idiopathic scoliosis treatment. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
237. MacKay, C. J., Doschak, M. R., Wohl, G. R. and **Zernicke, R. F.** Mechanical of the bone-ligament complex in end-stage osteoarthritis following antiresorptive drug therapy. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
238. Schneider, P. S., Wakeling, J. M., Loitz-Ramage, B., **Zernicke, R. F.** and Ronsky, J. L. Time-frequency analysis of myoelectric signals from children with cerebral palsy: A new muscular co-contraction assessment technique. *Transactions of 4th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2003.
239. Monteleone, B., Ronsky, J. L., Meeuwisse, W., and **Zernicke, R. F.** Effects of functional ankle instability on ankle joint complex kinematics during a lateral hop movement. *Transactions of the Canadian Orthopaedic Association/Canadian Orthopaedic Research Society*, Calgary, Alberta, June 2004.
240. Ramage, B., Wakeling, J., Desrochers, J., **Zernicke, R. F.**, and Ronsky, J. L. Static stability and response to perturbation with and without AFOs in healthy adults. *Transactions of the Canadian Orthopaedic Association/Canadian Orthopaedic Research Society*, Calgary, Alberta, June 2004.
241. LaMothe, J. and **Zernicke, R. F.** Mechanical loading rate and strain gradients positively relate to periosteal bone formation rate. *Transactions of FASEB and Experimental Biology 2004*, Washington, DC, April 2004.
242. LaMothe, J. and **Zernicke, R. F.** Relation between loading rate, strain gradients, and bone adaptation. *Transactions of the Canadian Orthopaedic Association/Canadian Orthopaedic Research Society*, Calgary, Alberta, June 2004.
243. Hamilton, H., Coombe, D., Meyer, F., Tran, D., and **Zernicke, R. F.** Modeling fluid flow and tracer transport in Haversian bone. *Transactions of the Canadian Orthopaedic Association/Canadian Orthopaedic Research Society*, Calgary, Alberta, June 2004.

244. Haslam, S. G., Miller, S. D., Doschak, M. R., **Zernicke, R. F.**, Bray, R. C. Reconstruction of the anterior cruciate ligament in rabbits: An artificial graft approach. *Transactions of the Canadian Orthopaedic Association/Canadian Orthopaedic Research Society*, Calgary, Alberta, June 2004.
245. Monteleone, B., Ronsky, J. L., Meeuwisse, W., and **Zernicke, R. F.** Ankle joint complex kinematics during a lateral hop movement in functional ankle instability. *Transactions of the Canadian Academy of Sports Medicine*, Vancouver, British Columbia, April 2004.
246. LaMothe, J., Reimer, R., and **Zernicke, R. F.** Genetic-related obesity does not adversely affect bone mechanical and morphometrical properties. *Transactions of Canadian Society of Biomechanics*, Halifax, Nova Scotia, September 2004.
247. MacKay, C. J., Doschak, M. R., Wohl, G. R., and **Zernicke, R. F.** Biomechanics of the bone-ligament-complex in late stage osteoarthritis following antiresorptive drug therapy. *Transactions of Annual Meeting of the Canadian Society of Biomechanics*, Halifax, Nova Scotia, August 2004.
248. Schneider, P., Wakeling, J., and **Zernicke, R. F.** Effects of dynamic ankle joint stiffness on postural stability. *Transactions of Annual Meeting of the Canadian Society of Biomechanics*, Halifax, Nova Scotia, August 2004.
249. Hamilton, N., Coombe, D., Tran, D., and **Zernicke, R. F.** Load induced fluid flow simulation in cortical bone. *Transactions of Annual Meeting of the Canadian Society of Biomechanics*, Halifax, Nova Scotia, August 2004.
250. Schneider, P., Wakeling, J., and **Zernicke, R. F.** Effects of dynamic ankle joint stiffness on joint mechanics during gait. *Transactions of the American Society of Biomechanics*, Portland, Oregon, October 2004.
251. Schneider, P., Wakeling, J., and **Zernicke, R. F.** Effects of dynamic ankle joint stiffness on postural stability. *Transactions of the 5th Combined Meeting of the Orthopaedic Research Societies (USA, Canada, Japan, and Europe)*, Banff, Alberta, October 2004.
252. LaMothe, J. M. and **Zernicke, R. F.** Waveform dwell phase influences osteogenesis. *Transactions of the Combined Meeting of the Orthopaedic Research Societies (USA, Canada, Japan, and Europe)*, Banff, Alberta, October 2004.
253. Bergeron, C., Cheriet, F., Ronsky, J. L., **Zernicke, R. F.**, and Labelle, H. A robust methodology for non-invasive follow-up of scoliotic spinal curve from three-dimensional trunk surface. *Transactions of the International Research Society for Spinal Deformity*, Vancouver, British Columbia, June 2004.
254. Robu D., Poncet, P., **Zernicke, R. F.**, and Ronsky, J. L. Assessment of 3D reconstruction of scoliotic human torso using imaging techniques and stereo-radiography. *Transactions of GEOIDE Conference-National Centre of Excellence*, Hull, Quebec, June 2004.
255. Monteleone, B., Ronsky, J. L., Meeuwisse, W. H. and **Zernicke, R. F.** Effects of functional ankle instability on ankle joint complex moments during a lateral hop movement. *Transactions of the Combined Meeting of the 5th Orthopaedic Research Societies (USA, Canada, Japan, and Europe)*, Banff, Alberta, October 2004.
256. Tyson, N. A., LaMothe, J. M. and **Zernicke, R. F.** Number of exercise bouts per week affects murine osteogenesis. *Transactions of the 5th Combined Meeting of the Orthopaedic Research Societies (USA, Canada, Japan, and Europe)*, Banff, Alberta, October 2004.
257. Carroll, M. J., Fick, G. H., and **Zernicke, R. F.** Variability in upper and lower extremity joint position sense. *Transactions of the 5th Combined Meeting of the Orthopaedic Research Societies (USA, Canada, Japan, and Europe)*, Banff, Alberta, October 2004.

258. Poncet, P., Robu, D., Jaremko, J., Harder, J., Cheriet, F., Zernicke, R. F., and Ronsky, J. L. Assessing three dimensional changes in trunk asymmetry after surgical correction of ideopathic scoliosis. *Transactions of the 5th Combined Meeting of the Orthopaedic Research Societies (USA, Canada, Japan, and Europe)*, Banff, Alberta, October 2004.
259. Hamilton, N., Coombe, D., Tran, D., and **Zernicke, R. F.** Modeling fluid flow and nutrient transport in cortical bone. *Transactions of the International Symposium on Fluid Flow in Bone*, Seattle, Washington, September 2004.
260. Sran, M. M., Khan, K. M., Cooper, D. M. L., Boyd, S. K., **Zernicke, R. F.**, and Oxland, T. R. Regional trabecular bone volume ratio predicts failure of thoracic vertebrae under a posteroanterior load. *Transactions of American Society for Bone and Mineral Research*, Seattle Washington, September 2004.
261. Wu, H., Poncet, P., Harder, J., Cheriet, F., Labelle, H., **Zernicke, R. F.**, and Ronsky, J. L. Prediction of scoliosis progression in time series using artificial intelligence techniques. *Transactions of 60th Canadian Orthopaedic Research Society/Canadian Orthopaedic Association Conference*, Montreal, Quebec, June 2005.
262. Poncet, P., Jaremko, J., Harder, J., **Zernicke, R. F.**, and Ronsky, J. L. Relation between torso surface asymmetry and spinal deformity during treatment of scoliosis with rigid brace. *Transactions of 60th Canadian Orthopaedic Research Society/Canadian Orthopaedic Association Conference*, Montreal, Quebec, June 2005.
263. Poncet, P., Westover, L., Harder, J., **Zernicke, R. F.**, and Ronsky, J. L. Repeatability of subject repositioning on a 3D torso surface imaging system for the assessment of scoliosis. *Transactions of 60th Canadian Orthopaedic Research Society/Canadian Orthopaedic Association Conference*, Montreal, Quebec, June 2005.
264. Lincoln, M., Doschak, M., Lorincz, C., Trinh, T., and **Zernicke, R. F.**, Localization of osteoprotegerin gene expression in the human tibial plateau at end stage osteoarthritis: Correlation with bony adaptation by microCT. *Transactions of 60th Canadian Orthopaedic Research Society/Canadian Orthopaedic Association Conference*, Montreal, Quebec, June 2005.
265. Monteleone, B., Ronsky, J. L., Meeuwisse, W. H., and Zernicke, R. F. Effects of functional ankle instability on lower leg muscle activity during a lateral hop movement. *Transactions of ASME Summer Bioengineering Conference*, Vail, Colorado, June 2005.
266. MacNeil, J., Boyd, S. K., Doschak, M. R., and **Zernicke, R. F.** Preservation of periarticular cancellous morphology and mechanical strength in post-traumatic experimental osteoarthritis by antiresorptive therapy. *Transactions of XXth Congress of the International Society of Biomechanics*, Cleveland, Ohio, August 2005.
267. Schneider, P., Wakeling, J., and **Zernicke, R. F.** Effect of dynamic ankle joint stiffness on joint mechanics and muscle activation patterns during locomotion. *Transactions of XXth Congress of the International Society of Biomechanics*, Cleveland, Ohio, August 2005.
268. Hamilton, N., Coombe, D., Tran, D., Goulet, G., and **Zernicke, R. F.** Fluid flow in bone is correlated to sites of smallest cross-sectional area perpendicular to load-induced stress gradients. *Transactions of XXth Congress of the International Society of Biomechanics*, Cleveland, Ohio, August 2005.
269. Goulet, G. C., Hamilton, N., Coombe, D., Tran, D., and **Zernicke, R. F.** Sites of greatest fluid flow in bone. *Transactions of XXth Congress of the International Society of Biomechanics*, Cleveland, Ohio, August 2005.

270. Zhang, S., Wright, J. E. I., Bansal, G., **Zernicke, R. F.**, and Uludag, H. Imparting mineral affinity to proteins by bisphosphonate conjugation: Cleavage of fetuin-bisphosphonate conjugates with various thiols. *Transactions of Canadian Biomaterials Society*, Waterloo, Ontario, 2005.
271. Wright, J. E. I., Bansal, G., Zhang, S., **Zernicke, R. F.**, and Uludag, H. Imparting mineral affinity to proteins by bisphosphonate conjugation: Cleavage of disulfide-linked BSA-bisphosphonate conjugate with cysteine. *Transactions of Canadian Biomaterials Society*, Waterloo, Ontario, 2005.
272. Wu, H., Ronsky, J. L., Poncet, P., Cheriet, F., Xue, D., Harder, J. A., and **Zernicke, R. F.** Prediction of scoliosis progression in time series using a hybrid learning technique. *Transactions of the 27th International Conference of IEEE Engineering in Medicine and Biology Society*, Shanghai, China, 2006, pp. 6452-6455.
273. Goulet, G., Hamilton, N., Coombe, D., Tran, D., and **Zernicke, R. F.** Modeling fluid flow and tracer transport in Haversian bone. *Transactions of American Society for Bone and Mineral Research*, Nashville, Tennessee, September 2005.
274. Doschak, M. R., Kucharski, C. M., Wright, J. E. I., **Zernicke, R. F.**, and Uludag, H. Improved delivery and retention of osteoprotegerin to bone after conjugation to a bisphosphonate drug. *Transactions of American Society for Bone and Mineral Research*, Nashville, Tennessee, September 2005.
275. Schneider, P., Wakeling, J., and **Zernicke, R. F.** Effect of ankle-foot orthotic stiffness on joint mechanics and muscle activation patterns during walking and step down. *Transactions of Canadian Society for Clinical Investigation*, Vancouver, British Columbia, September 2005.
276. Goulet, G., Coombe, D., Tran, D., and **Zernicke, R. F.** Simulated fluid flow and cell metabolism in Haversian bone. *Transactions of Canadian Orthopaedic Research Society*, Toronto, Ontario, June 2006.
277. Bergeron, C., Cheriet, F., Ronsky, J. L., **Zernicke, R. F.**, Labelle, H. Implicit nonlinear encapsulation of anatomical structure relations in scoliosis permitting almost linear regression schemes. *Proceedings of the North East Colloquium on Artificial Intelligence*, Cornell University, Ithica, NY, April 2006.
278. Monteleone, B., Meeuwisse, W., Ronsky, J. and **Zernicke, R. F.** Role of ankle joint complex kinematics and muscle activity in functional ankle instability. *Transactions of Canadian Orthopaedic Research Society*, Toronto, Ontario, June 2006.
279. Monteleone, B., Meeuwisse, W., Ronsky, J. and **Zernicke, R. F.** Effects of functional ankle instability on ankle joint complex kinematics and muscle activity during a lateral hop movement. *3rd Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2005.
280. Lamothe, J. M., and **Zernicke, R. F.** Trapezoidal waveform dwell phase influences osteogenesis. *3rd Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2005.
281. Schneider, P., Wakeling, J., and **Zernicke, R. F.** Dynamic ankle-foot orthotic resistance affects joint mechanics and EMG during walking and downward stepping. *3rd Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2005.
282. Wu, H., Ronsky, J. L., Poncet, P., Harder, J., Chariet, F., and **Zernicke, R. F.** Prognostic factors and progression of scoliotic spinal deformity using consecutive spinal stereoradiographs. *3rd*

Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health, Banff, Alberta, October 2005.

283. Goulet, G., Coombe, D., Tran, D., and **Zernicke, R. F.** Modelling fluid flow and tracer transport in Haversian bone. *Transactions of 5th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2005.
284. Lamothe, J. M. and **Zernicke, R. F.** Rest insertion affects osteogenesis. *Transactions of 5th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2005.
285. MacNeil, J., Boyd, S. K., Doschak, M. R., and **Zernicke, R. F.** Maintaining periarticular cancellous morphology and mechanical strength in post-traumatic experimental osteoarthritis by antiresorptive therapy. *Transactions of 5th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2005.
286. Wu, H., Ronsky, J. L., Poncet, P., Harder, J., Chariet, F., and **Zernicke, R. F.** Natural history and progression of adolescent idiopathic scoliosis by consecutive spinal radiographs. *Transactions of Canadian Orthopaedic Research Society*, Toronto, Ontario, June 2006.
287. Goulet, G., Cooper, D., Coombe, D., MacKay, C. J., Martinuzzi, R., and **Zernicke, R. F.** Modeling hierarchical levels of fluid flow in cortical bone: Integrating fluid flow simulation with micro-CT. *Transactions of the 29th Annual Meeting Canadian Medical and Biological Engineering Society*. Vancouver, British Columbia, June 2006.
288. Monteleone, B., Meeuwisse, W., Ronsky, J. and **Zernicke, R. F.** Ankle Joint complex kinematics and muscle activity in functional ankle instability. *Transactions of Annual Meeting Canadian Academy of Sport Medicine*, Edmonton, Alberta, May 2006.
289. Cooper, M. L., Goulet, G. C., Thomas, C. D., Clement, J. G., Coombe, D., and **Zernicke, R. F.** Impact of age-dependent cortical bone rarefaction on tissue fluid pressure: Implications for mechanotransduction. *Transactions of the 5th World Congress of Biomechanics*, Munich, Germany, August 2006 [*Journal of Biomechanics* 39: S411, 2006].
290. Goulet, G. C., Cooper, D. M. L., Coombe, D., and **Zernicke, R. F.** Modelling geometrically accurate basic-multicellular-unit morphologies: Implications for regulation of cortical bone remodeling. *Transactions of the 5th World Congress of Biomechanics*, Munich, Germany, August 2006 [*Journal of Biomechanics* 39: S410, 2006].
291. Schneider, P. S., Wakeling, J. M., and **Zernicke, R. F.** Adaptation to varied ankle-foot orthotic resistance during treadmill walking. *Transactions of the 5th World Congress of Biomechanics*, Munich, Germany, August 2006 [*Journal of Biomechanics* 39: S30-S31, 2006].
292. MacKay, C. J., Goulet, G. C., Cooper, D. M. L., Coombe, D., and **Zernicke, R. F.** Validation and quantification of an in vivo model of functional bone adaptation. *Transactions of the 5th World Congress of Biomechanics*, Munich, Germany, August 2006 [*Journal of Biomechanics* 39: S451, 2006].
293. Croft, J., von Tschaner, V., and **Zernicke, R. F.** Postural mechanisms during unipedal quiet stance on compliant surfaces. *Transactions of the 5th World Congress of Biomechanics*, Munich, Germany, August 2006 [*Journal of Biomechanics* 39: S33, 2006].
294. Wu, H., Ronsky, J. L., Chariet, F., Harder, J., and **Zernicke, R. F.** Scoliotic progression patterns in prognostic factors and future prediction of spinal deformity progression. *Transactions of International Research Society of Spinal Deformities*, Ghent, Belgium June 2006.

295. Schneider, P. S., Wakeling, J. M., and **Zernicke, R. F.** Humans rapidly adapt to varied ankle-foot orthotic resistance during treadmill walking. *Transactions of the Canadian Society for Clinical Investigation*, Ottawa, Canada, September 2006.
296. Varkey, M., Kucharshi, C., Winn, S., Murray, S., Matyas, J. R., **Zernicke, R. F.**, and Uludag, H. Response of bone marrow stromal cells to low dose of systemic bFGF treatment in normal and ovariectomized rats. *Transactions of the Canadian Biomaterials Society*, Calgary, Canada, June 2006.
297. **Zernicke, R. F.**, Goulet, G., LaMothe, J., Cooper, D., MacKay, C., Lorincz, C., Coombe, D., Judex, S., Boyd, S., Wohl, G., and Doschak, M. Bone: Cellular mechanisms to functional adaptation. *Transactions of the Canadian Society of Biomechanics*, Waterloo, Canada, August 2006.
298. Goulet, G. C., Cooper, D. M. L., Coombe, D. and **Zernicke, R. F.** Modelling fluid flow and nutrient transport in Haversian bone: Integrating μ CT imaging with fluid flow simulation. *Transactions of the Canadian Society of Biomechanics*, Waterloo, Canada, August 2006.
299. MacKay, C. J., Goulet, G. C., Cooper, D. M. L., Coombe, D., and **Zernicke, R. F.** Strain environment in an *in vivo* model of functional bone adaptation. *Transactions of 6th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2006.
300. Goulet, G. C., Coombe, D., Cooper, D. M. L., Martinuzzi, R., and **Zernicke, R. F.** Modelling fluid flow and nutrient transport in cortical bone: Integrating μ CT imaging with fluid flow simulation. *Transactions of 6th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2006.
301. Lorincz, C., Reimer, R., Hepple, R., and **Zernicke, R. F.** Functional adaptation of bone: Interactive effects of diet and mechanical loading environment. *Transactions of 6th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2006.
302. Croft, J., von Tschaner, V., and **Zernicke, R. F.** Movement patterns during unipedal stance. *Transactions of 6th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2006.
303. MacKay, C. and **Zernicke, R. F.** Induced strain environment characterization in an in-vivo model of functional bone adaptation. *4th Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2006.
304. Varkey, M., Kucharski, C., Winn, S., Murray, S., Matyas, J. R., **Zernicke, R. F.**, and Uludag, H. Response of bone marrow stromal cells to low dose systematic bFGF treatment in normal and ovariectomized rats. *4th Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2006.
305. LaMothe, J. and **Zernicke, R. F.** Waveform dwell phase influences osteogenesis. *4th Annual Conference of the Alberta Provincial CIHR Training Program in Bone and Joint Health*, Banff, Alberta, October 2006.
306. MacNeil, J. A., Doschak, M. R., **Zernicke, R. F.**, and Boyd, S. K. Preservation of periarticular cancellous morphology and mechanical strength in post-traumatic experimental osteoarthritis by antiresorptive therapy. *Transactions of the Orthopaedic Research Society*, San Diego, California, February 2007.
307. Cooper, D. M. L., Goulet, G. C., Coombe, D., and **Zernicke, R. F.** Impact of bone loss on simulated load-induced fluid pressure. *Transactions of the Orthopaedic Research Society*, San Diego, California, February 2007.
308. Doschak, M. R., Lincoln, M., Trinh, T., Hallgrímsson, B., and **Zernicke, R. F.** Osteoprotegerin gene expression in end stage osteoarthritis: Correlation with bony adaptation by microCT.

309. Guang, L., Beaulieu, C., Maksymowych, W. P., **Zernicke, R. F.**, and Doschak, M. R. Bone marrow edema as a diagnostic surrogate of osteoarthritis. *Transactions Osteoarthritis Research Society International – World Congress of Osteoarthritis, Prague, Czech Republic, December 2006.*
310. Gooch, K., Frank, C. B., Hibbert, J., Pearce, T., and **Zernicke, R. F.** Waitlists for hip and knee primary total joint replacements – Hype or hindrance? *Transactions of the Canadian Orthopaedic Association, Halifax, Nova Scotia, June 2007.*
311. **Zernicke, R. F.**, Frank, C. B., Gooch, K., Johnston, B., and Pearce, T. Evaluation of an evidence-based continuum for hip and knee replacements in Alberta. *Transactions of the Canadian Orthopaedic Association, Halifax, Nova Scotia, June 2007.*
312. Goulet, G. C., Coombe, D., Cooper, D. M. L., and **Zernicke, R. F.** Modelling hierarchical levels of fluid flow in bone. *Transactions of the Canadian Orthopaedic Research Society, Halifax, Nova Scotia, June 2007.*
313. Lorincz, C. and **Zernicke, R. F.** Functional adaptation of bone: Interactive effects of diet and mechanical loading environment. *Transactions of the Canadian Orthopaedic Research Society, Halifax, Nova Scotia, June 2007.*
314. Westerbeek, Z., Hepple, R., and **Zernicke, R. F.** Interactive effects of aging and caloric restriction on bone structure and mechanical properties. *Transactions of the Canadian Orthopaedic Research Society, Halifax, Nova Scotia, June 2007.*
315. Monteleone, B. J., Ronsky, J. L., Weeuwisse, W. H., and **Zernicke, R. F.** Ankle joint complex dynamic stiffness and centre of pressure in functional ankle instability. *Transactions of Canadian Academy of Sport Medicine, Quebec City, Quebec, March 2007.*
316. Goulet, G. C., Coombe, D., Martinuzzi, R. J., and **Zernicke, R. F.** Lacunocanalicular fluid flow and nutrient transport in bone. *Transactions of the 21st Congress of the International Society of Biomechanics, Taipei, Taiwan, July 2007. [Journal of Biomechanics 40(S2): S38, 2007].*
317. Fried, A., Manske, S. L., Lorincz, C., Eller, L. K., Reimer, R. A., and **Zernicke, R. F.** Dairy protein and calcium effects on bone structure and strength. *Transactions of the 21st Congress of the International Society of Biomechanics, Taipei, Taiwan, July 2007. [Journal of Biomechanics 40(S2): S373, 2007].*
318. **Zernicke, R. F.** Functional adaptation of bone. *Transactions of the 21st Congress of the International Society of Biomechanics, Taipei, Taiwan, July 2007. [Journal of Biomechanics 40(S2): S17, 2007].*
319. Goulet, G. C., Cooper, D. M. L., Coombe, D., Thomas, D. L., Clement, J. G., and **Zernicke, R. F.** Lacunocanalicular fluid flow and regulation of bone basic multicellular activity. *29th Annual Meeting, Transactions of American Society for Bone and Mineral Research, Honolulu, Hawaii, September 2007.*
320. MacKay, C. J., Goulet, G. C., Coombie, D., and **Zernicke, R. F.** Comparison of an in vivo model of functional bone adaptation to mechanical environment. *29th Annual Meeting, Transactions of American Society for Bone and Mineral Research, Honolulu, Hawaii, September 2007.*
321. Lorincz, C., Reimer, R., Clinck, J., and **Zernicke, R. F.** Effects of diet on mechanical, molecular, and serum markers of bone turnover. *29th Annual Meeting, Transactions of American Society for Bone and Mineral Research, Honolulu, Hawaii, September 2007.*

322. Campbell, G. M., Lorincz, C., **Zernicke, R. F.**, and Boyd, S. K. Body composition measurement by micro-CT and validation against DEXA. *Transactions of American Society for Biomedical Engineering*, Los Angeles, September, 2007.
323. Manske, S. L., Tiu-Ambrose, T., Cooper, D. M. L., Guy, P., Forster, B. B., McKay, H. A., and **Zernicke, R. F.** Cortical and trabecular bone in the femoral neck both contribute to proximal femur failure load prediction. *Transactions of 7th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2007.
324. Jones, M. D., Guang, L., Larocque, M., Fallone, G., **Zernicke, R. F.**, and Doschak, D. R. MicroMRI and microCT: Dual imaging modalities studying osteoarthritis in a rat model. *Transactions of 7th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2007.
325. Guang, L., Heo, G., Koles, Z., **Zernicke, R. F.**, and Doschak, M. R. Loss of trabecular bone support in the distal femoral metaphysis by microCT. *Transactions of 7th Alberta Biomedical Engineering Conference*, Banff, Alberta, October 2007.
326. Tapper, J., Shrive, N., Frank, C. B., Marchuk, L., **Zernicke, R. F.**, Thornton, G., and Ronsky, J. L. Joint failure in ACL/MCL deficiency: The impact on the mechanical environment of both the healing and remaining intact ligaments. *Transactions of OARSI World Congress on Osteoarthritis*, Ft. Lauderdale, Florida, December 2007.
327. Manske, S. L., Steiner, D., Kim, S. H., Boyd, S. K., Koch, L. G., Britton, S. L., Hepple, R. T., and **Zernicke, R. F.** Differences in bone morphology in older female rats selectively bred for high and low aerobic capacity. *Transactions of Orthopaedic Research Society*, San Francisco, March 2008.
328. Anderson, S., Ronsky, J. L., Howard, J., and **Zernicke, R. F.** Classifying progression of scoliosis based on changes in torso shape. *Transactions of Orthopaedic Research Society*, San Francisco, March 2008.
329. Tapper, J., Funakoshi, Y., Hariu, M., Marchuk, L., Thornton, G. M., Ronsky, J. L., **Zernicke, R. F.**, Shrive, N. G., and Frank, C. B. Joint failure in ACL/MCL deficiency: The impact of apparent strain environment on healing and remaining intact ligaments. *Transactions of International Symposium of Ligaments and Tendons*, San Francisco, California, March 2008.
330. Wu, H., Ronsky, J. L., Evison, R., Howard, J., and **Zernicke, R. F.** Prediction of scoliosis progression with serial spinal curves and artificial intelligence techniques. *Transactions of Orthopaedic Research Society*, San Francisco, California, March 2008.
331. Swanson, S. L., Ronsky, J. L., Howard, J. J., Punsalan, P., and **Zernicke, R. F.** Detecting progression of scoliosis based on changes in torso shape. *Transactions of Orthopaedic Research Society*, San Francisco, California, March 2008.
332. Evison, R., Ronsky, J. L., Howard, J. J., Harder, J., and **Zernicke, R. F.** Monitoring scoliosis deformity with torso surface topography – what constitutes “normal”? *Transactions of Combined Meeting of Canadian Orthopaedic Association and American Orthopaedic Association*, Montreal, Quebec, June 2008.
333. Gooch, K., Hibbert, J., Khong, H., Liu, L., Dort, L., Smith, D., Wasylak, T., Frank, C., Johnston, W., Pearce, T., and **Zernicke, R. F.** Predictors of acute hospital length of stay following a hip or knee replacement. *Transactions of Canadian Orthopaedic Association Annual Meeting*, Quebec City, Quebec, June 2008.
334. Wasylak, T., Gooch, K., Dort, L., Smith, D., Khong, H., Hibbert, J., Liu, L., Frank, C., Johnston, W., Pearce, T., and **Zernicke, R. F.** Reducing wait times for hip and knee replacement with a pilot

of a new care continuum in Canada. *Transactions of Canadian Orthopaedic Association Annual Meeting*, Quebec City, Quebec, June 2008.

335. Lorincz, C., Reimer, R., and **Zernicke, R. F.** Dietary effects on bone mechanical properties and molecular markers. *Transactions of North American Congress of Biomechanics*, Ann Arbor, Michigan, August 2008.
336. Manske, S. L., Koch, L. G., Britton, S. L., Boyd, S. K., Hepple, R. T., and **Zernicke, R. F.** Differences in bone morphology in male rats selectively bred for high or low aerobic capacity. *Transactions of North American Congress of Biomechanics*, Ann Arbor, Michigan, August 2008.
337. Goulet, G. C., Cooper, D. M. L., Coombe, D., Martinuzzi, R., and **Zernicke, R. F.** Lacunocanalicular fluid flow and regulation of basic multicellular unit activity. *Transactions of North American Congress of Biomechanics*, Ann Arbor, Michigan, August 2008.
338. Howard, J. J., Swanson, S., Ronsky, J. L., Punsalan, P., Evison, R., Parsons, D., and **Zernicke, R. F.** 3D torso surface topography corrections related to surgical treatment of scoliosis for idiopathic-type curves. *Transactions of Scoliosis Research Society*, Salt Lake City, Utah, September 2008.
339. Jones, M. D., Li, G., Larocque, M., Fallone, G., **Zernicke, R. F.**, and Doschak, M. R. MicroCT and microMRI: Dual imaging modalities for comparing alendronate and risedronate as preventative treatments of osteoarthritis. *Transactions of World Congress on Osteoarthritis*, Rome, Italy, September 2008.
340. **Zernicke, R. F.**, Goulet, G., LaMothe, J., Boyd, S., Judex, S., MacKay, C., Lorincz, C., Coombe, D., Wohl, G., Doschak, M., Cooper, D., Hamilton, N., and Manske, S. Mechanisms of bone adaptation. *Transactions of Human Biomechanics 2008*, Prague, Czech Republic, October 2008.
341. Goulet, G. C., Coombe, D., Martinuzzi, R. J., and **Zernicke, R. F.** Validation and application of iterative coupling to poroelastic problems in bone fluid flow. *Transactions of 17th Annual Symposium on Computational Methods in Orthopaedic Biomechanics*, Las Vegas, Nevada, February 2009.
342. Lorincz, C. R., Reimer, R. A., and **Zernicke, R. F.** High-frequency loading with rest insertion counterbalances high-fat-sucrose diet effects on bone properties. *Transactions of the 22nd Congress of the International Society of Biomechanics*, Capetown, South Africa, August 2009.
343. Cole, J. H., Halonen, N. R., Yoon, L. S., Koch, L. G., Britton, S. L., Goldstein, S. A., **Zernicke, R. F.**, Morris, M. D., and Kozloff, K. M. Spatial variations in tissue composition with rats selectively bred for high and low aerobic exercise capacity. *Transactions of the International Bone and Mineral Society 39th Sun Valley Workshop: Musculoskeletal Biology*, Sun Valley, Idaho, August 2009.
344. Manske, S. L., Boyd, S. K., and **Zernicke, R. F.** Muscle and bone follow similar temporal patterns of recovery from muscle-induced disuse due to botulinum toxin injection. *Transactions of American Society for Bone and Mineral Research*, Denver, Colorado, September 2009.
345. Cole, J. H., Halonen, N. R., Yoon, L. S., Koch, L. G., Britton, S. L., Goldstein, S. A., **Zernicke, R. F.**, Morris, M. D., and Kozloff, K. M. Differential effects of intrinsic aerobic capacity and exercise training on bone composition and structure. *Transactions of American Society for Bone and Mineral Research*, Denver, Colorado, September 2009.
346. Halonen, N. R., Tayim, R., Goulet, G. C., Cole, J. H., Clifford, C., Goldstein, S. A., Koch, L. G., Britton, S. L., **Zernicke, R. F.**, and Kozloff, K. M. Intrinsic aerobic capacity influences fracture healing, MSC proliferation, and mineralization. *Transactions of Orthopaedic Research Society*, New Orleans, Louisiana, March 2010.

347. Halonen, N. R., Cole, J. H., Goulet, G. C., Sobel, A., Koch, L. G., Britton, S. L., Morris, M. D., **Zernicke, R. F.**, and Kozloff, K. M. Influence of intrinsic and trained aerobic capacity on bone mineralization and material properties. *Transactions of Orthopaedic Research Society*, New Orleans, Louisiana, March 2010.
348. Goulet, G. C., Halonen, N. R., Koch, L. G., Britton, S. L., **Zernicke, R. F.**, and Kozloff, K. M. Differential effects of ovariectomy on high and low aerobic capacity rats. *Transactions of Orthopaedic Research Society*, New Orleans, Louisiana, March 2010.
349. Wasylyshyn, A., Manske, S. L., Thomas, M. M., Betik, A. C., Zernicke, R. F., Hepple, R. T., and Boyd, S. K. Effects of exercise training on bone microarchitecture of senescent rats. *Transactions of Orthopaedic Research Society*, New Orleans, Louisiana, March 2010.
350. Goulet, G. C., Halonen, N. R., Cole, J. H., Koch, L. G., Britton, S. L., Morris, M. D., **Zernicke, R. F.**, and Kozloff, K. M. Influence of intrinsic aerobic exercise capacity on skeletal health. *Transactions of American College of Sports Medicine*, Baltimore, Maryland, June 2010.
351. Manske, S. L., Boyd, S. K., and **Zernicke, R. F.** Ground reaction forces diminish in mice after Botulinum toxin injection. *Transactions of Canadian Society of Biomechanics*, Kingston, Ontario, June 2010.
352. Manske, S. L., Boyd, and **Zernicke, R. F.** Muscle atrophy is responsible for changes in bone microarchitecture after BTX injection. *Transactions of European Society of Biomaterials*, Edinburgh, Scotland, July 2010.
353. Tayim, R., Cole, J., Halonen, N., Goulet, G., Koch, L., Britton, S., **Zernicke, R. F.**, Alford, A., and Kozloff, K. Differences in oxygen consumption rate of osteoblast lineage cells in rats bred for high and low aerobic capacity. *Transactions of American Society of Bone and Mineral Research*, Toronto, Ontario, October 2010.
354. Manske, S. L., Good, C. A., Boyd, S. K., and **Zernicke, R. F.** High-frequency, low-magnitude mechanical signals do not prevent bone loss in absence of muscle activity. *Transactions of American Society of Bone and Mineral Research*, Toronto, Ontario, October 2010.
355. Sinder, B., Caird, M., Halonen, N., Goulet, G., Vodnicki, D., **Zernicke, R., F.**, and Kozloff, K. Fluorescence-guided micron-level mechanical testing of bone reveals patterns of tissue mineralization and age. *Transactions of World Molecular Imaging Congress*, Kyoto, Japan, September 2010.
356. Palmieri-Smith, R. M., Villwock, M., Hecht, G., Downie, B., and **Zernicke, R. F.** Pain and effusion effects on quadriceps activation and strength. *Transactions of Orthopaedic Research Society*, Long Beach, CA, January 2011.
357. Cole, J. H., Tayim, R. J., Welker, E. M., Halonen, N. R., Goulet, G. C., Koch, L. G., Britton, S. L., **Zernicke, R. F.**, Alford, A. I., and Kozloff, K. M. Intrinsic aerobic capacity influences osteoblast proliferation, differentiation, and mineralization *in vitro*. *Transactions of Orthopaedic Research Society*, Long Beach, CA, January 2011.
358. Sinder, B. P., Goulet, G. C., Vodnick, D., **Zernicke, R. F.**, and Kozloff, K. M. Nanoindentation coupled with fluorescent microscopy to examine age and anabolic parathyroid hormone effects on bone. *Transactions of Orthopaedic Research Society*, Long Beach, CA, January 2011.
359. Manske, S. L., Uzer, G., Boyd, S. K., **Zernicke, R. F.**, and Judex, S. Understanding bone's response to high-frequency, low-magnitude vibration: From muscles to cells. *Transactions of the Sun Valley Bone Conference*, Sun Valley, Idaho, August 2011.

360. Cole, J. H., Tramer, J. S., White, L. E., Koch, L. G., Britton, S. L., **Zernicke, R. F.**, and Kozloff, K. M. Rats with high intrinsic aerobic capacity retain increased femoral cortical thickness with aging. *Transactions of Orthopaedic Research Society*, San Francisco, California, February 2012.
361. Cole, J. H., Koch, L. G., Britton, S. L., **Zernicke, R. F.**, and Kozloff, K. M. Hypoxia disrupts osteoblast proliferation and mineralization in rats with high intrinsic aerobic capacity. *Transactions of Orthopaedic Research Society*, San Antonio, Texas, January 2013.
362. Cole, J. H., Graf, K. H., Patel, P. Y., Koch, L. G., Britton, S. L., Alford, A., I., **Zernicke, R. F.**, and Kozloff, K. M. Oxygen-dependent mineralization differences with high intrinsic aerobic capacity are associated with osteoblast extracellular matrix gene expression. *Transactions of American Society for Bone and Mineral Research*, Baltimore, Maryland, September 2013.
363. Goulet, G. C., Williams, D. A., Ashton-Miller, J. A., McLean, S. G., **Zernicke, R. F.**, and Goulet, G. C. Athletic performance and proprioception are improved with enhanced compression apparel. *Transactions of XXIV Congress of the International Society of Biomechanics*, Natal, Brazil, August 2013.
364. Deneweth, J. M., Pomeroy, SM, Russell, J. R., McLean, S. G., **Zernicke, R. F.**, Bedi, A., and Goulet, G. C. Playing position-specific joint motions in elite American football athletes. *Transactions of the Orthopaedic Research Society*, New Orleans, Louisiana, March 2014.
365. Deneweth, J. M., Pomeroy, SM, Russell, J. R., McLean, S. G., **Zernicke, R. F.**, Bedi, A., and Goulet, G. C. Position-specific hip and knee kinematics in NCAA football athletes. *Transactions of the American Orthopaedic Society for Sports Medicine*. Seattle, Washington, July 2014.
366. Whiteside, D., Deneweth, J., Pohorence, M., Sandoval, B., McLean, S., Russell, J., **Zernicke, R. F.**, and Goulet, G. C. Evaluating the validity of Functional Movement Screen Grading. *Medicine and Science in Sports and Exercise*, 46(5S), 832-833. 2014 American College of Sports Medicine Conference, Orlando, Florida, May, 2014.
367. Whiteside, D., Deneweth, J. M., Bedi, A., Pomeroy, S. M., Bancroft, R., **Zernicke, R. F.**, and Goulet, G. C. Mechanical etiology of femoroacetabular impingement (FAI) in ice hockey goaltenders. *Proceedings of the XIII International Symposium on 3D Analysis of Human Movement*. Lausanne, Switzerland, July 2014.
368. Whiteside, D., McGinnis, R. S., Deneweth, J. M., Holstad, R., Martini, D. N., **Zernicke, R. F.**, Goulet, G. C. Relating ball flight characteristics, variability in release location and game success in elite baseball pitchers. *Transactions of the XIX Congress of the European College of Sport Science*. Amsterdam, Netherlands, July 2014.
369. Kozloff, K. M., Cole, J. H., Goulet, G. C., Koch, L. G., Britton, S. L., and **Zernicke, R. F.** Does aerobic capacity influence bone health and susceptibility to injury? *Transactions of the Calgary Running Symposium*, Calgary, Canada, August 2014.
370. Deneweth, J., McGinnis, R., **Zernicke, R. F.**, and Goulet, G. C. Individual-specific determinants of successful adaptation to minimal and maximal running shoes. *Footwear Science* (DOI 10.1080/19424280.2015.1038629) Footwear Biomechanics Symposium, Liverpool, England, July 2015.
371. Whiteside, D., **Zernicke, R. F.**, and Goulet, G. C. Predicting Tommy John surgery in Major League Baseball: A machine learning approach. *Transactions of the XXI Congress of the European College of Sport Science*. Vienna, Austria, July 2016.
372. Agresta, C. E., Southern, E. M., Kessler, S. E., Goulet, G. C., **Zernicke, R. F.**, Deneweth, J. M. Intra-individual variability in novel footwear associated with injury in distance runners.

Transactions of the XXI Congress of the European College of Sport Science. Vienna, Austria, July 2016.

373. Goulet, G. C., Agresta, C. E., Kessler, S. E., **Zernicke, R. F.**, and Deneweth, J. M. Influence of shoe characteristics on injury in distance runners. *Transactions of the XXI Congress of the European College of Sport Science*. Vienna, Austria, July 2016.
374. Agresta, C. E., Goltra, D., Goulet, G. C., **Zernicke, R. F.**, and Deneweth, J. M. Adaptation to enforced step frequency perturbations during running. *Transactions of the 40th Annual Meeting of the American Society of Biomechanics*, Raleigh, North Carolina, August 2016.
375. Southern, E., Kessler, S. E., Agresta, C. E., **Zernicke, R. F.**, Goulet, G. C., and Deneweth, J. M. Effect of running-induced neuromuscular fatigue on vertical stiffness and lower-limb stiffness. *Transactions of the 40th Annual Meeting of the American Society of Biomechanics*, Raleigh, North Carolina, August 2016.
376. Kessler, S. E., Southern, E., Agresta, C. E., Goulet, G. C., **Zernicke, R. F.**, and Deneweth, J. M. Effect of cushioning on running economy. *Transactions of the 40th Annual Meeting of the American Society of Biomechanics*, Raleigh, North Carolina, August 2016.
377. Burns, G. T., Deneweth Zendler, J., and **Zernicke, R. F.** Wireless insoles to measure ground reaction forces: Step-by-step validity in hopping, walking, and running. *Transactions of the 35th Annual Meeting of the International Society of Biomechanics in Sports*, Cologne, Germany, June 2017
378. Agresta, C., Peacock, J., Housner, J. **Zernicke, R. F.**, and Deneweth Zendler, J. Using detrended fluctuation analysis to assess system stability during running. *Transactions of the 41st Annual Meeting of the American Society of Biomechanics*, Boulder, Colorado, August 2017
379. Burns, G. T., Deneweth Zendler, J., and **Zernicke, R. F.** Step frequency in elite ultra-marathoners during a 100 km road race. *Transactions of the 41st Annual Meeting of the American Society of Biomechanics*, Boulder, Colorado, August 2017
380. **Zernicke, R. F.** and Hart, D. A. Skeletal Adaptation: Injury, Exercise and Osteoarthritis. *Transactions of the World Congress of Rheumatology and Orthopaedics*, Madrid, Spain, September 2018.
381. Hafer, J. F., **Zernicke, R. F.**, and Agresta, C. E. Novice runners display altered lower extremity and pelvic control compared to experienced runners. *Transactions of the World Congress of Biomechanics*, Dublin, Ireland, July 2018.
382. Burns, J. T., Lee, M., and Zernicke, R. F. Tracking season continuity to estimate injury incidence in distance runners among collegiate programs using publicly available data. *Transactions of European Congress of Sport Science*, Dublin, Ireland, July 2018.
383. Hafer, J. F., **Zernicke, R. F.**, and Agresta, C. E. Coordination and variability differ by years of running experience. *Transactions of American Society of Biomechanics*, Rochester, MN, August 2018.

Administrative Portfolio (UCLA)

Leading Undergraduate/Graduate Programs

In the Department of Kinesiology, I led development of new undergraduate and graduate curricula in biomechanics—which contributed to my UCLA Distinguished Teaching Award—and I spearheaded the development and implementation of the PhD program in kinesiology at UCLA.

Department Chair

During my last years at UCLA, I was Chair of the Department of Kinesiology, a department that was ranked as the #1 Kinesiology Program in the United States (Gourman Report).

Administrative Portfolio (University of Calgary)

Leading Undergraduate and Graduate Research/Training Programs

I led several U of C and interuniversity initiatives to enhance integrated, interdisciplinary undergraduate and graduate research and education. At the undergraduate level (U of C), I structured and secured funding (university and private donor) for the *Undergraduate Student Research Program*, which is now a university-wide undergraduate student research program in “health and wellness”. At the interuniversity graduate level, I led the development of and secured seed funding (Whitaker Foundation, \$1.1 million) for the Alberta Provincial Graduate Program in Biomedical Engineering between the University of Calgary (Faculties of Medicine, Kinesiology, and Engineering) and University of Alberta (Faculties of Engineering, Medicine and Dentistry, and Rehabilitation Medicine). Also at the interuniversity graduate education level, I secured CIHR and AHFMR (Alberta Heritage Foundation for Medical Research) funding for the Alberta Provincial CIHR Training Program in Bone and Joint Health (\$2.1 million). This was a joint University of Calgary and University of Alberta PhD program that trained highly qualified basic scientists and clinician scientists in transdisciplinary bone and joint research. In 2007, the provincial CIHR Training Program in Bone and Joint Health had 37 PhD trainees and more than 40 faculty mentors at the two universities.

Dean

Administratively, as Dean of the Faculty of Kinesiology at the University of Calgary, I led the rapid maturation and expansion of the Faculty’s integrated research, teaching, and university/community programs. Between 1995 and 2004, scholarships for Kinesiology undergraduates increased by 375%, and graduate student funding increased by 475%. During that same time, Kinesiology external research support increased by more than 800%, and we completed construction of a \$14 million expansion (30,000 sq ft) that doubled our multidisciplinary research space, with funds secured from a competitive Canada Foundation for Innovation grant and provincial sources and donor fundraising. The Roger Jackson Centre for Health and Wellness Research (opened in 2005), comprising the Human Performance Laboratory and Sport Medicine Centre, provides an outstanding environment for research in basic and applied research related to human performance, biomechanics, and musculoskeletal health and well-being. The Centre, arguably, has risen to the highest echelon of research in the field. In a program review, internationally renowned biomechanists (Dr. Stuart McGill—University of Waterloo and Dr. Günter Rau—Helmholtz Institute for Biomedical Engineering, Germany) acclaimed the Centre to be the “best in the world” and the “gold standard” in clinical biomechanics and sport medicine research.

Special Advisor to the President

While serving as the Special Advisor to the President for Health and Wellness at the University of Calgary, I led an extensive and comprehensive consultation with all 15 faculties at the U of C, other Alberta universities and post-secondary institutions, the provincial government, industry, and health regions to develop the foundation for a interdisciplinary platform for research and education in health and wellness. As part of that consultation, I organized a successful international symposium, held in Calgary, which brought outstanding Canadian (e.g., the Alberta Premier and Minister of Health & Wellness, Chief Public Health Officer of Canada, and Scientific Director, CIHR Institute of Population and Public Health) and international (e.g., USA and Australia) speakers to inform and shape the focus of public health for the 21st century.

Institute Executive Director

The Alberta Bone and Joint Health Institute (www.albertaboneandjoint.com) was founded in 2004 as a not-for-profit centre of excellence for the advancement of Alberta-wide bone and joint patient treatment, research, and education. The Institute's goal was to create an innovative and sustainable system of patient-centered health care that efficiently provides the best quality of bone and joint health. The difference is being seen in significantly faster access and world-class service, safety and quality, regardless of location, and at a cost taxpayers can afford. In accomplishing its goal, the Institute—with its partners—created a health care model that can be applied to other medical procedures and in other parts of Canada for the benefit of patients and the public. The provincial Institute had more than 25 staff and active partnerships with all nine health regions in Alberta; Alberta's bone and joint physicians, surgeons, and health care providers; Alberta Ministry of Health & Wellness; the Universities of Calgary and Alberta; Alberta Orthopaedic Society; Alberta Medical Association; and the Alberta College of Physicians and Surgeons. One example of the Institute's new health services model and provincial approach was tested in a randomized controlled trial, Alberta Hip and Knee Replacement Project, simultaneously launched in Edmonton, Red Deer and Calgary (accounting for more than 80% of provincial hip and knee joint replacements). Interim results with more than 3400 patients—reported nationally—showed: (1) significant improvement in patient and health care provider satisfaction (driven by declines of almost 85% in specialist consultation waiting time, declines of 90% in surgery waiting time, and declines of 30% in hospital stay), (2) faster recovery and enhanced patient engagement and education, (3) increased efficiency, including major gains in the number of surgeries per day per operating room, and (4) at significantly less cost.

This project received the 2007 Canadian Institutes of Health Research Partnership Award (\$25,000).

Administrative Portfolio (University of Michigan)

Director

My initial administrative role at the University of Michigan was to lead the development of an interdisciplinary center, the Bone & Joint Injury Prevention & Rehabilitation Center (the Center), which is supported by researchers and senior leaders from the University of Michigan Medical School (especially the Departments of Orthopaedic Surgery and Physical Medicine & Rehabilitation), School of Kinesiology, College of Engineering, and School of Public Health, University of Michigan Health System, and by the generous contribution and support of the Judy and Fred Wilpon Family Foundation.

Selected initiatives for the Center for November 2007 through December 2009 included:

- Developing the Center's Strategic Plan (2008-2012) emphasizing initiatives in musculoskeletal injury prevention, treatment and rehabilitation—with a primary emphasis on injury prevention.
- Establishing vision, mission, guiding principles, objectives, and proposed actions of the Center.
- Elevating profile of the Center, through presentations to community, alumni, donor groups, and researchers (e.g., Michigan Seminar for Major Donors; Ann Arbor Kiwanis; Public Forum—*Knees: The Weak Link! What can I do to prevent knee injury and stay active despite a painful knee?*; Traverse City, Medical School alumni and potential donors; U-M Development Office, 4th Thursday Up North, Petoskey; North American Symposium at University of Michigan—*Head Injury & Concussion: Prevention, Treatment & Rehabilitation*; NCAA Scholarly Colloquium, Invited Keynote Lecture, Washington, DC—*Play at your own risk: Sport and the injury epidemic*).
- Organizing and coordinating a university-wide pilot grant program through the Center.
- Developing and sustaining the Center website (www.bjiprc.umich.edu).
- Establishing Center committee structure, including: Operations, Communications, Finance, Outreach & Symposia, Injury Registries, Pilot Research, Networks/Affiliations, and Planning; and hired full-time Center staff (i.e., Clinical Research Coordinator, Marketing and Communications Director).
- Implementing a marketing and communications plan to increase public awareness about injury prevention and to foster a positive image of the Center with academic and research leaders, with public opinion leaders, and with media and potential donors. Tactics include: bylined, opinion-editorials; Web-based and print materials; broadcast, print, and radio interviews; meetings and presentations; press releases; social networking sites; the Bone & Joint Center's Website; U-M internally published electronic and print publications; and research articles in peer-reviewed, scholarly journals.
- Initiating partnership with Safe Kids Worldwide (SKW) to focus on a grass roots campaign to reduce and prevent youth sport injury. SKW consists of a global network of coalitions and chapters (>600) whose mission is to prevent accidental childhood injury. They have a successful track record reducing many types of childhood injuries. The Center, along with SKW, hosted leading experts to collaborate on youth sport injury prevention research and education at a workshop at the University of Michigan (2009). Attendees for the workshop included experts from U-M (Orthopaedic Surgery, Kinesiology, Public Health and Engineering), Safe Kids, American Orthopaedic Society for Sports Medicine, American Pediatric Association, International Olympic Committee, FIFA/F-MARC, Santa Monica Orthopaedics Group, Athletic Trainers Association, Physical Therapists Association, American Academy of Neurology, and corporate supporters.
- May 2009, held a public forum at the Center that attracted more than 350 people who wanted to learn more about back pain. Center clinician-scientists in physical medicine, orthopaedic surgery and neurosurgery participated.

Dean

January 1, 2010, appointed Dean of the School of Kinesiology at the University of Michigan (www.kines.umich.edu). Decanal appointment completed, June 30, 2016.

Multiple points of progress were achieved for the School, including:

- Re-organized administrative structure of School: Three Associate Deans [Research, Undergraduate Affairs, and Graduate and Faculty Affairs; Director of Teaching and Learning Innovation; and senior staff administrative organization and reporting structure)
- Increased the number of tenure and tenure-track faculty by 35% (over 2009)
- Developed balanced budget plans each year 2010–2017
- Research revenues increased each year from 2010–2016 (cumulative increase > 28%)
- Grant and contract success rate (2014–2016) averaged 47% for School
- Doubled (over 2009) the number of applicants to PhD program
- Masters program enrollment was highest in history
- UM Kinesiology doctoral program ranked 3rd in the United States (National Academy of Kinesiology)
- Exceeded undergraduate enrolment targets (each year) for fall 2010–2016 (with excellent quality of students; applications for Fall 2016 were highest in history; less than 22% of applicants were admitted)
- Developed and implemented School strategic plan
- Strengthened research and curricular links between Kinesiology and University of Michigan schools and colleges (e.g., College of Engineering, Ross School of Business, School of Public Health, Medical School, Taubman College of Architecture and Urban Planning, and School of Social Work)
- Initiated and led comprehensive undergraduate curriculum revision (e.g., including adding a new major in Health & Fitness (<http://www.kines.umich.edu/programs/health-and-fitness>) — launched Fall 2014 and ranked #1 in United States by *USA Today*, October 2014)
- Established a new track in the Movement Science program—IntraOperative NeuroMonitoring (IONM). Rapidly growing in student interest. Michigan’s IONM program was the first university in the nation to be accredited (September 2015), establishing Michigan as the national leader in this area of scientific and medical innovation (<http://kines.umich.edu/programs/movement-science/ionm>)
- Enhanced digital and experiential learning for students
- Expanded the number and scope of internships (>200) for both undergraduates and masters students
- International experiences for undergraduates were established, with programs for students in Europe, Australia, China, Israel, and Brazil
- Revitalized the Kinesiology Seminar Series for 2010-2016
- Reorganized School communications & development: Director of Communications was hired; new Alumni and Annual Fund Director was hired; new Director of Advancement was hired; new major gifts officer was hired; redesigned School Website and launched social media ventures

- School was selected by the Provost and UM Planning Committee as a “highest priority” status for new facilities on UM campus (with \$105 million committed funding from the UM Regents, September 2016)
- Developed key fundraising initiatives for the University of Michigan campaign (i.e., undergraduate and graduate student support, faculty endowments and chairs, and new learning and research facilities)

Co-Director, Exercise & Sport Science Initiative — University of Michigan

The University of Michigan academic programs and Athletics are partnering in the Exercise and Sport Science Initiative (ESSI: www.essi.umich.edu), which integrates the resources of an elite research university and one of the nation’s top collegiate athletic programs to optimize physical performance of student-athletes and health for people of all ages and abilities. ESSI facilitates responding to research-related questions presented to Athletics; faculty interface, prioritize, and conduct sport and exercise-related research and innovation. Collaborative solutions, such as research studies, prototypes, data analytics, and performance assessments and monitoring, are developed and communicated to campus and the general public.

Through the experience and expertise of U-M’s schools and colleges and athletic program, ESSI is performing cutting-edge interdisciplinary research, and translating findings to the marketplace, related to:

- Performance optimization in exercise and sports for individuals and teams
 - Strength, training, conditioning, psychology, nutrition, rest, recovery, regeneration, and injury prevention
 - Understanding the role of physical activity in improved physical and mental performance, overall health, and quality of life at all ages
- Data science and analytics
 - Apps, big data, individual and team analytics, data underlying urban planning, business development, marketing, and entrepreneurship
- Sport technology & innovation
 - Sensors, helmets, intelligent apparel, equipment design, and rapid prototyping

ESSI draws on exceptional resources to address the challenges in exercise and sports by engaging:

- Faculty and student researchers across campus in such key fields as kinesiology, psychology, biology, public health, medicine, nutrition, engineering, sensor design, and data science and analytics
- Student-athletes, coaches, and trainers from U-M’s varsity, club, and intramural sports
- Partnerships with industry and government

ESSI promotes the fitness, health, and well-being of students, of athletes at all levels, and of society by encouraging the transfer of emerging insights and innovations into practice in the classroom, on the playing fields, and in communities, as well as through apps, sport analytics, proactive communication and outreach, and commercial applications.

Seed funding for ESSI is provided by the Office of the Provost, Office of the Vice President for Research, and U-M Athletics.

Co-Director, Michigan Performance Research Laboratory (www.mipr.kines.umich.edu)

The mission of the Michigan Performance Research Laboratory is to better understand human movement potential and functionality. To achieve this, we focus research in three main areas: (1) advancing knowledge of the complexity of musculoskeletal injury development, (2) developing novel metrics to assess and monitor real-world performance using wearable sensors, and (3) investigating the biomechanical and motor control consequences associated with changes in body dynamics, age, or skill.

Our goal is to foster physical resilience and functional durability so that athletes and individuals of all ages can maximize their potential and fully participate in the human experience through movement