

CURRICULUM VITAE

Rachel L. Lenhart MD

**Assistant Professor
Department of Orthopaedic Surgery
Division of Pediatric Orthopaedic Surgery**

OFFICE ADDRESS:

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8915 W Connell Court
Milwaukee, WI 53226

EDUCATION:

2004 - 2008 B.S. Biomedical Engineering (Summa Cum Laude), University of Tennessee; Department of Mechanical, Aerospace, and Biomedical Engineering, Knoxville, TN
2008 - 2017 M.D.; Medical Scientist Training Program, University of Wisconsin-Madison, School of Medicine and Public Health, Madison, WI
2010 - 2012 M.S., University of Wisconsin-Madison, Department of Biomedical Engineering, Madison, WI
2010 - 2013 M.S., University of Wisconsin-Madison, Department of Mechanical Engineering, Madison, WI
2010 - 2015 Ph.D; Minor: Clinical Investigation, University of Wisconsin-Madison, Department of Biomedical Engineering, Madison, WI

POSTGRADUATE TRAINING AND FELLOWSHIP APPOINTMENTS:

07/01/2017 - 06/30/2022 Residency, Orthopaedic Surgery, Medical College of WI, Milwaukee, WI
08/01/2022 - 07/30/2023 Fellowship, Pediatric Orthopaedic Surgery, Children's Hospital of Philadelphia, Philadelphia, PA
08/01/2023 - 06/30/2024 Fellowship, Orthopaedic Surgery, Cerebral Palsy, Nemours Children's Hospital, Wilmington, DE

FACULTY APPOINTMENTS:

2024 - Present Assistant Professor, Orthopedic Surgery, Medical College of Wisconsin, Milwaukee, WI

EDUCATIONAL ADMINISTRATIVE APPOINTMENTS:

2021 - 2022 Administrative Chief Resident, Orthopaedic Surgery, Medical College of WI, Milwaukee, WI

HOSPITAL AND CLINICAL ADMINISTRATIVE APPOINTMENTS:

2025 - Present Director of Gait Lab, Orthopedic Surgery, Medical College of WI, Milwaukee, WI, Orthopedic Surgery, Medical College of WI, Milwaukee, WI

AWARDS AND HONORS:

2008 L. Raymond Shobe Award - Outstanding Academic Achievement in Biomedical Engineering, Department of Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee-Knoxville
2008 Top Collegiate Scholar - 2008, University of Tennessee-Knoxville
2009 - 2013 Global Health Certificate, UW Institute for Global Health
2010 - 2012 TL1 Scholar (1UL1RR025011), UW Institute for Clinical and Translational Research
2012 - 2014 Student Travel Award Winner, Gait and Clinical Movement Analysis Society Annual Conference
2012 - 2013 Collaborative Research Travel Grant Recipient, Burroughs Wellcome Fund
2012 - 2013 Alexander Cowie Fellowship, Department of Mechanical Engineering, UW-Madison
2012 Finalist for Young Investigator Award, Gait and Clinical Movement Analysis Society Annual

Conference
2013 MSTP Pilot Grant Recipient , UW Institute for Clinical and Translational Research
2013 Biomechanics Interest Group Student Research Award, American College of Sports Medicine Annual Conference
2013 Delsys Travel Award Winner, to International Society of Biomechanics Conference
2013 Matching Dissertation Grant Award Winner , International Society of Biomechanics
2013 Student Scholarship Winner, American Academy of Cerebral Palsy and Developmental Medicine
2014 - 2017 NIH Predoctoral Fellow – F30AR065838 National Institute for Arthritis and Musculoskeletal and Skin Diseases
2014 Best Podium Presentation, Gait and Clinical Movement Analysis Society Annual Conference
2014 Dr. Kevin Granata Young Investigator Award, Gait and Clinical Movement Analysis Society
2015 Young Scientist Pre-doctoral Award , American Society of Biomechanics
2015 Dr. Kevin Granata Young Investigator Award, Gait and Clinical Movement Analysis Society
2015 Best Podium Presentation, Gait and Clinical Movement Analysis Society Annual Conference
2016 Alpha Omega Alpha Member
2017 Medical Student Achievement in Orthopedics Award, School of Medicine and Public Health, University of Wisconsin-Madison
2020 Extended Recovery Unit – Provider of the Month – April 2020, Froedtert Hospital, Medical College of Wisconsin
2020 Resident Scholar, American Orthopaedic Foot & Ankle Society
2021 Resident Orthopaedic In-Training Examination Achievement (OITE) Award Best score in program November 2020, Medical College of Wisconsin
2022 Resident Orthopaedic In-Training Examination Achievement (OITE) Award Best score in program November 2021, Medical College of WI
2022 Graduating Resident Research Award Best research paper/presentation at the John Gould Lectureship 2022, Medical College of WI
2022 Scholarship Recipient, International Pediatric Orthopaedic Symposium (IPOS)

MEMBERSHIPS IN HONORARY AND PROFESSIONAL SOCIETIES:

American Academy of Orthopaedic Surgery (Member)
Alpha Omega Alpha (Member)
Pediatric Orthopaedic Society of North America (Member)
Orthopaedic Research Society (Member)
Tau Beta Pi (Member)
American Academy of Cerebral Palsy and Developmental Medicine (Member)

EDITORSHIPS/EDITORIAL BOARDS/JOURNAL REVIEWS:

Journal Review
Journal of Applied Biomechanics
Gait & Posture
Journal of Biomechanics
Journal of Clinical Medicine

LOCAL/REGIONAL APPOINTED LEADERSHIP AND COMMITTEE POSITIONS:

2008 Reception Co-coordinator, Body Donor Ceremony, University of Wisconsin, Madison; School of Medicine and Public Health
2009 - 2013 Student Executive Committee, Medical Scientist Training Program, University of Wisconsin, Madison
2009 - 2010 Medical School Liaison, Medical Scientist Training Program, University of Wisconsin, Madison
2010 - 2013 Outreach Committee Chair, Medical Scientist Training Program, University of Wisconsin, Madison
2011 - 2013 Exhibit Coordinator: “The Body Machine”, Engineering Expo, University of Wisconsin, Madison
2012 - 2013 Institutional Coordinator for the “Tomorrow’s Physician Initiative”, American Physician Scientists Association
2013 - 2016 Student Representative, Executive Board: Gait and Clinical Movement Analysis Society
2020 - 2022 Resident Member, Resident Research Committee, Dept of Orthopedic Surgery, Medical College

of WI

NATIONAL ELECTED/APPOINTED LEADERSHIP AND COMMITTEE POSITIONS:

2006 - 2007 Treasurer, Vice President, Society of Women Engineers, University of Tennessee; Knoxville
2006 - 2007 Treasurer, President, Honors Events Committee, University of Tennessee; Knoxville

INVITED LECTURES/WORKSHOPS/PRESENTATIONS:

National

“Dynamic Simulation of Patellofemoral Contact Loading while Running at Varied Step Rates”, World Congress of Biomechanics, Boston, MA, 07/09/2014

“Influence of Surgery on Musculoskeletal Mechanics in Children with Crouch Gait”, NIMBioS Undergraduate Research Conference, Knoxville, TN, 11/22/2015

Regional

“Musculoskeletal Mechanics”, Research KL2 Seminar “Musculoskeletal Mechanics” Madison, WI, USA, UW-Madison Institute for Clinical and Translational Research; Madison, WI, USA, 12/07/2011

“Gait Analysis”, Medical Scientist Training Program Seminar, UW-Madison; Madison WI, 04/10/2013

“Improving Surgical Correction of Pediatric Gait Abnormalities”, UW-Madison Interface Colloquium, Madison, WI, 10/30/2013

“Understanding and Improving Treatment of Pediatric Gait Abnormalities”, UW-Madison Medical Scientist Training Program Seminar, Madison, WI, 11/19/2014

Local

“Limb Lengthening: Focus on Intramedullary Motorized Nails”, Dept of Orthopedic Surgery, Medical College of WI, Milwaukee, WI, 03/03/2021

“Leadership: Building and Maintaining the Best Teams”, Dept of Orthopedic Surgery, Medical College of WI, Milwaukee, WI, 10/06/2021

Biostatistics, Dept of Orthopedic Surgery, Medical College of WI, Milwaukee, WI, 10/30/2024

PEER REVIEWED WORKSHOPS/PRESENTATIONS:

International

Kim S, Talavage T, Lenhart R, Hoffa A, Wong D, Pisoni D, Recruitment of Language Pathway by Audio-Visual Presentation of Degraded Speech, Annual Meeting of the Organization for Human Brain Mapping, Chicago, IL, 2007

Kim S, Talavage TM, Lenhart R, Hoffa A, Wong D, Pisoni DB, Cortical Networks underlying Benefits of Audio-visual Speech Integration, Fourteenth Annual Meeting of the Organization for Human Brain Mapping, Melbourne, Australia, 06/2008

Lenhart RL, Schwartz MH, Thelen DG, Optimal Patellar Tendon Length is Greater for Crouched Walking Postures, Abstract for podium presentation, International Society of Biomechanics, Natal, Brazil, 08/2013

Thelen DG, Kaiser J, Lenhart RL, Choi K, Simulating the Influence of Ligament Properties on Cartilage Contact Patterns within the Context of Dynamic Movement, Abstract for invited talk, World Congress of Biomechanics, Boston, MA, 07/2014

Thelen DG, Lenhart RL, Kaiser J, Choi K, Dynamic Simulation of Patellofemoral Contact Loading while Running at Varied Step Rates, Abstract for invited talk, World Congress of Biomechanics, Boston, MA, 07/2014

Lenhart RL, Kaiser J, Choi K, Thelen DG, In vivo validation of a dynamic knee model used to simulate patellar tendon advancement procedures, Abstract for invited talk, World Congress of Biomechanics, Boston, MA, 07/2014

Smith C, Lenhart R, Thelen D., A Variable Cartilage Property Formulation of the Elastic Foundation Model to Predict Contact Pressures during Walking, Abstract accepted for podium presentation at the XV International Symposium on Computer Simulation in Biomechanics, Edinburgh, UK, 07/2015

Lenhart RL, Tassone C, Liu XC, Thometz J, Spellman C, Escott B, Effect of Casting in the treatment of Early Onset Scoliosis, Abstract for poster presentation at International Research Society of Spinal Deformities, Virtual, 01/2021

Herrero C, Lenhart RL, Trionfo A, Shrader, MW, Howard JJ, Guided Growth of the Proximal Femur for Hip

Displacement in Young Children with Cerebral Palsy: A Preliminary Report Comparing Inferomedial Screw Epiphysiodesis with and without Adductor Releases., Abstract accepted for podium presentation at the Australasian Academy of Cerebral Palsy and Developmental Medicine, Cannes, Australia, 07/2024

National

- Lenhart R, Kim S, Talavage T, Functional Magnetic Resonance Imaging (fMRI) Study of AudioVisual Speech Perception, Abstract for poster presentation at the Society of Women Engineers Conference, Nashville, TN, 10/2007
- Lenhart RL, Francis CA, Lenz AL, Thelen DG, Empirical evaluation of Soleus and Gastrocnemius Function During Walking: Implications for Equinus Gait, Abstract for poster presentation, American Society of Biomechanics Annual Conference, Long Beach, CA, 08/2011
- Lenhart RL, Thelen DG, Influence of Musculoskeletal Geometry on Model-Based Predictions of Plantarflexor Function During Gait, Abstract for podium presentation, Gait and Clinical Movement Analysis Society Annual Conference, Grand Rapids, MI, 05/2012
- Lenhart RL, Wille CM, Chumanov ES, Heiderscheidt BC, Thelen DG, Increasing Running Step Rate Reduces Patellofemoral Joint Forces, Abstract for podium presentation, American Society of Biomechanics Annual Conference, Gainesville, FL, 08/2012
- Kaiser J, Bradford R, Lenhart R, Kijowski R, Thelen D, Is the Contralateral Knee a Valid Reference When Quantitatively Assessing Secondary Knee Kinematics?, Abstract for poster presentation at the Orthopedic Research Society Annual Meeting, San Antonio, TX, 01/2013
- Lenhart RL, Schwartz MH, Thelen DG, Patellar Position Effects on the Knee Extensor Mechanism, Abstract for podium presentation, Gait and Clinical Movement Analysis Society Annual Conference, Cincinnati, OH, 05/2013
- Lenhart RL, Wille CM, Chumanov ES, Hetzel S, Heiderscheidt BH, Thelen DG, Kinematic and Kinetic Predictors of Patellofemoral Joint Force in Healthy Runners, Abstract for thematic poster presentation, American College of Sports Medicine Annual Conference, Indianapolis, IN, 05/2013
- Lenhart RL, Schwartz MH, Thelen DG, Optimal Patellar Position Varies for Different Walking Postures, Abstract for podium presentation, American Academy for Cerebral Palsy and Developmental Medicine, Milwaukee, WI, 10/2013
- Maag AD, Laufer S, Kwan C, Cohen ER, Lenhart RL, Stork NC, Halanski MA, Pugh CM, Sensor-Based Assessment of Cast Placement and Removal, Abstract for poster presentation, Medicine Meets Virtual Reality Conference, Manhattan Beach, CA, 02/2014
- Stork N, Lenhart R, Nemeth B, Noonan K, Sund S, Halanski M, To Cast, to Saw, and Not to Injure: Can Safety Strips Decrease Cast Saw Injuries?, Abstract for podium presentation, American Academy of Orthopedic Surgeons Conference, New Orleans, LA, 03/2014
- Stork N, Lenhart R, Nemeth B, Noonan K, Sund S, Halanski M, To Cast, to Saw, and Not to Injure: Can Safety Strips Decrease Cast Saw Injuries?, Abstract for podium presentation, Pediatric Orthopedic Society of North America (Awarded Best Quality Safety and Value Initiative Paper), Hollywood, CA, 04/2014
- Lenhart RL, Kaiser J, Choi KW, Thelen DG, Simulation of knee cartilage contact pressure in crouch gait, Abstract for podium presentation, Gait and Clinical Movement Analysis Society, Newark, DE, 06/2014
- Smith CR, Lenhart R, Kaiser J, Choi K, Thelen DG, The Effect of Cartilage Thickness on Tibiofemoral Contact Pressure During Gait, Abstract for poster presentation, Orthopedic Research Society, Las Vegas, NV, 03/2015
- Lenhart RL, Kaiser J, Smith C, Thelen DG, Influence of Patella Alta and Crouch on Patellofemoral Cartilage Contact Pressure, Abstract for podium presentation, Gait and Clinical Movement Analysis Society, Portland, OR, 03/2015
- Smith CR, Lenhart RL, Kaiser J, Vignos MF, Thelen DG, The Influence of Cartilage Morphology and Elasticity on Tibiofemoral Contact Pressures During Walking, Abstract accepted for podium presentation at the Summer Biomechanics, Bioengineering, and Biotransport Conference, Snowbird, UT, 06/2015
- Smith C, Lenhart R, Thelen D, The Sensitivity of Predicted Knee Contact Mechanics during Gait to Variations in Ligament Properties, Abstract for poster presentation at the American Society of Biomechanics Annual Conference, Columbus, OH, 08/2015
- Lenhart RL, Smith CR, Schwartz MH, Novacheck TF, Thelen DG, Simulating the effects of crouch gait

- surgeries on knee mechanics, Abstract for podium presentation at the American Society of Biomechanics Annual Conference, Columbus, OH, 08/2015
- Smith CR, Lenhart RL, Kaiser J, Vignos MF, Thelen DG, The Effect of Ligament Properties on Tibiofemoral Kinematics and Contact Pressure during Gait, Abstract for podium presentation at the Computer Methods in Biomechanics and Biomedical Engineering Annual Conference, Montreal, Canada, 09/2015
- Halanski MA, Hildahl B, Lenhart RL, Chaudhary R, Rortvedt-Amundson, Chrenshaw T, Maternal Diets Deficient in Vitamin D Increase Kyphosis in Offspring, Abstract for E-poster presentation, Pediatric Orthopedic Society of North America, Indianapolis, IN, 04/2016
- Lenhart RL, Smith CR, Schwartz MH, Novacheck TF, Thelen DG, The Effect of Distal Femoral Extension Osteotomy on Muscle Lengths after Surgery, Abstract for podium presentation at the Gait and Clinical Movement Analysis Society, Memphis, TN, 05/2016
- Francis CA, Lenhart RL, Franz JR, Kaiser J, Towles J, Work in Progress: Evaluation of Biomechanics Activities at a College Engineering Outreach Event., Abstract for poster presentation at the American Society for Engineering Education, New Orleans, LA, 05/2016
- Bittman MF, Lenhart RL, Schwartz MH, Novacheck TF, Thelen DG, Relationship Between Patella Height, Crouch Severity, and Outcomes Following Surgical Treatment, Abstract for podium presentation at the Gait and Clinical Movement Analysis Society, Salt Lake City, UT, 05/2017
- Bittman MF, Lenhart RL, Schwartz MH, Novacheck TF, Thelen DG, Evidence of Enhanced Moment Arms Following Patellar Tendon Advancement Surgery, Abstract for podium presentation at the Gait and Clinical Movement Analysis Society, Salt Lake City, UT, 05/2017
- Loeffler TF, Fritz JM, Lenhart RL, Moyle KA, Harris GF, Schmeling GJ, Assessment of Gait and Strength Following Surgical Repair of Isolated Femur Fracture, Abstract for poster presentation at the Orthopaedic Research Society, Austin, TX, 02/2019
- Maisel ME, Lenhart RL, Loeffler TE, Schmeling GJ, Harris GF, Fritz JM, Long-Term Gait and Strength Analysis Following Post-Operative Repair of Femoral Shaft Gunshot Fractures, Abstract for poster presentation at Orthopaedic Research Society, Phoenix, AZ, 02/2020
- Lenhart RL, Wang M, Schmeling GJ, Biomechanical Evaluation of Proximal Femoral Osteotomy Stabilized with a Retrograde Intramedullary Nail, Abstract for poster presentation at Orthopaedic Research Society, Phoenix, AZ, 02/2020
- Loeffler T, Fritz J, Lenhart R, Beck C, Martin J, Harris G, Schmeling G, Assessment of Hip Strength and Gait Following Intramedullary Nail Fixation of Isolated Diaphyseal Femur Fracture, Abstract for poster presentation at the American Society of Orthopaedic Surgeons., Orlando, FL, 03/2020
- Maisel ME, Schmeling GJ, Lenhart RL, Loeffler TE, Martin JM, Beck CJ, Harris GF, Konop KA, Fritz JM, Femoral Shaft Gunshot Fractures: Long-Term Post-Operative Gait and Strength, Abstract for podium presentation at the Gait and Clinical Movement Analysis Society, Virtual, 06/2020
- Lenhart RL, Gastrocnemius Contracture Leads to Altered Knee Motion and Increased Contact Pressures, Abstract for presentation at the Orthopaedic Research Society, Virtual, 02/2021
- Reiter AJ, Fritz JM, Canseco K, Kraus JC, Thelen DG, Lenhart RL, Residual Asymmetries in Functional Achilles Tendon Loading Following Rupture and Repair, Abstract for poster presentation at the American College of Sports Medicine, Denver, CO, 05/2023
- Lenhart R, Orellana K, Goodbody C, Baldwin K., Effect of Social Disparity on Scoliosis Severity in Cerebral Palsy., Abstract for poster presentation at American Academy American Academy for Cerebral Palsy and Developmental Medicine, Chicago, IL, 09/2023
- Orellana K, Lenhart R, Yang D, Baldwin K, Goodbody C, Does Social Deprivation Affect Severity of Hip Subluxation in Cerebral Palsy?, Abstract for podium presentation at American Academy American Academy for Cerebral Palsy and Developmental Medicine, Chicago, IL, 09/2023
- Lenhart RL, Värk PR, Baldwin KD, Schoenecker JG, Goodbody CM, Shah AS, Volar Deformity following Distal Radius Volar Plating in Skeletally-Immature Children., Abstract for ePoster at American Society for Surgery of the Hand, Toronto, Canada, 10/2023
- Geissler TM, Reiter A, Lenhart R, Canseco K, Dziuk C, Cross J, Thelen D, Kraus JC, Fritz JM, Investigation Into Musculotendinous Function Following Repair Of Achilles Tendon Rupture - Trends In Gait, Strength, And Range Of Motion., Abstract for poster presentation at the Orthopaedic Research Society, Long Beach, CA, 02/2024
- Lenhart RL, Värk PR, Baldwin KD, Goodbody CM, Schoenecker JG, Shah AS, A Clinical and Scientific Paradigm Shift: Revisiting Growth After Pediatric Radius Fracture Plating., Abstract for ePoster at Pediatric Orthopaedic Society of North America, National Harbor, MD, 05/2024

- Taylor D, Lenhart RL, Lennon N, Church C, Henley J, Shrader MW, Using Gait Analysis in the Treatment of Diastematomyelia., Abstract for poster presentation at the Gait and Clinical Movement Analysis Society, Atlanta, GA, 06/2024
- Lenhart RL, Caban-Rivera, D, Church C, Johnson CL, Trionfo A, Shrader MW, Howard JJ, The Less-Affected Side in Spastic Hemiplegia: Is it the Same as Typically Developing? A Study of Muscle Properties and Function, Abstract accepted for podium presentation at the American Academy of Cerebral Palsy and Developmental Medicine, Quebec City, Canada, 10/2024

COMMUNITY SERVICE ACTIVITIES:

- 2009 Medication Supply Coordinator MEDiC Student-Run Free Clinics, University of Wisconsin-Madison. Responsible for keeping three free clinics stocked with medications,
- 2013 - 2014 Food Pantry Director Lussier Community Education Center Responsible for conducting monthly food pantry

RESEARCH EXPERIENCE:

- 2005 Summer Undergraduate Research Program Summer Experience in Biomedical Sciences, Dr. Lisa Gould University of Texas Medical Branch Project: Oxidative Stress, Tissue Ischemia, and the Effect of Age on Wound Healing Awards: Outstanding Poster Presentation in Toxicology, Dean's Award • Conducted experiments and analyzed data comparing different options for wound healing in rats
- 2006 Research Experience for Undergraduates (sponsored by the National Science Foundation) Weldon School of Biomedical Engineering, Dr. TM Talavage Purdue University Project: fMRI Studies of Audiovisual Speech Perception • Collected pilot studies for looking at brain regions associated with audiovisual speech perception
- 2007 Summer Undergraduate Research Fellowship Motion Analysis Laboratory, Dr. KR Kaufman Mayo Clinic, Rochester, MN Project: Osteotomy Analysis and Simulation Software • Developed computer code to determine alterations in joint pressures after osteotomy
- 2008 Biomechanics Laboratory, Dr. Kreg Gruben Departments of Biomedical Engineering and Kinesiology University of Wisconsin-Madison Graduate student rotation • Conducted experiments and analyzed data looking at the reason for falls in older adults
- 2008 UW Neuromuscular Biomechanics Laboratory, Dr. Darryl Thelen Departments of Mechanical and Biomedical Engineering University of Wisconsin-Madison Graduate student rotation • Wrote computer algorithm to calibrate laboratory force plates
- 2009 Occupational Ergonomics and Biomechanics Laboratory, Dr. Robert Radwin Department of Biomedical Engineering University of Wisconsin-Madison Graduate student rotation • Analyzed grip force data for time of onset
- 2010 - 2017 UW Neuromuscular Biomechanics Laboratory, Dr. Darryl Thelen Departments of Mechanical and Biomedical Engineering University of Wisconsin-Madison PhD Thesis Title: "Influence of Surgery on Musculoskeletal Mechanics in Children with Crouch Gait" (Defended May 6, 2015) • Developed new musculoskeletal model that included 6 degrees of freedom at the knee joint • Simulation of varying gait postures and surgical procedures to determine effects on knee mechanics • Additional projects included: patellofemoral mechanics during running and the empirical assessment of muscle function during walking • Experimental methods include 3D gait analysis, EMG, MRI • Analytical methods include computational musculoskeletal modeling, random forest algorithm, optimization
- 2017 - 2022 Department of Orthopaedic Surgery, Medical College of Wisconsin Trauma Division – Dr. Gregory Schmeling • Studying the effects of isolated femur fracture and IMN on gait and strength • Studying the effects of screw position and canal fill on micromotion during retrograde nailing • Studying the effects of femoral nail malrotation on gait and strength Foot and Ankle – Dr. Jonathan Kraus • Studying the effects of operative vs non-operative treatment of Achilles rupture on Achilles stress during walking
- 2022 - 2023 Division of Orthopaedic Surgery, Children's Hospital of Philadelphia Trauma – Dr. Apurva Shah • Studying the volar plating of the radius on bone morphology in children with open physes Neuromuscular – Dr. Keith Baldwin • Evaluation of how socioeconomic factors impact hip and spine treatment in neuromuscular patients
- 2023 - 2024 Department of Orthopaedic Surgery, Division of Cerebral Palsy, Nemours Children's Health

Division of Cerebral Palsy – Drs. M. Wade Shrader, Jason Howard, Arianna Trionfo • Studying effects of proximal femoral guided growth in young population • Studying muscle properties in hemiplegic patients

BIBLIOGRAPHY

Refereed Journal Publications/Original Papers

1. Lenhart RL, Goodbody CM. Symptomatic flatfoot in cerebral palsy. *Curr Opin Pediatr.* 2024 Feb 01;36(1):98-104.
2. Olson BJ, Lenhart R, Schmeling GJ, Fritz JM. Impact of Internal Malrotation of the Femur Followed by Derotational Osteotomy as Demonstrated by 3D Gait Analysis: A Case Report. *JBJS Case Connect.* 2022 Oct 01;12(4).
3. Lenhart RL, Tassone C, Liu XC, Thometz J, Spellman C, Escott B. Effect of casting in the treatment of Early Onset Scoliosis. *Stud Health Technol Inform.* 2021 Jun 28;280:291-292.
4. Bittmann MF, Lenhart RL, Schwartz MH, Novacheck TF, Hetzel S, Thelen DG. How does patellar tendon advancement alter the knee extensor mechanism in children treated for crouch gait? *Gait Posture.* 2018 Jul;64:248-254. PMID: PMC6181142
5. Halanski MA, Hildahl B, Amundson LA, Leiferman E, Gendron-Fitzpatrick A, Chaudhary R, Hartwig-Stokes HM, McCabe R, Lenhart R, Chin M, Birstler J, Crenshaw TD. Maternal Diets Deficient in Vitamin D Increase the Risk of Kyphosis in Offspring: A Novel Kyphotic Porcine Model. *J Bone Joint Surg Am.* 2018 Mar 07;100(5):406-415. PMID: PMC6818982
6. Lenhart RL, Smith CR, Schwartz MH, Novacheck TF, Thelen DG. The effect of distal femoral extension osteotomy on muscle lengths after surgery. *J Child Orthop.* 2017 Dec 01;11(6):472-478. PMID: PMC5725775
7. Brandon SCE, Thelen DG, Smith CR, Novacheck TF, Schwartz MH, Lenhart RL. The coupled effects of crouch gait and patella alta on tibiofemoral and patellofemoral cartilage loading in children. *Gait Posture.* 2018 Feb;60:181-187. PMID: PMC5809194
8. Lenhart RL, Brandon SC, Smith CR, Novacheck TF, Schwartz MH, Thelen DG. Influence of patellar position on the knee extensor mechanism in normal and crouched walking. *J Biomech.* 2017 Jan 25;51:1-7. PMID: PMC5204307
9. Lenhart RL, Youlo S, Schroth MK, Noonan KJ, McCarthy J, Mann D, Hetzel S, Sund SA, Halanski MA. Radiographic and Respiratory Effects of Growing Rods in Children With Spinal Muscular Atrophy. *J Pediatr Orthop.* 2017 Dec;37(8):e500-e504. PMID: PMC5352553
10. Halanski MA, Abrams S, Lenhart R, Leiferman E, Kaiser T, Pierce E, Franklin RR, Opel D, Noonan KJ, Crenshaw TD. Tendon transfer to unossified bone in a porcine model: potential implications for early tibialis anterior tendon transfers in children with clubfeet *Journal of Children's Orthopaedics.* 1 December 2016;10(6):705-714.
11. Francis CA, Lenhart RL, Franz JR, Kaiser J, Towles J. Work in progress: Evaluation of biomechanics activities at a college-wide engineering outreach event ASEE Annual Conference and Exposition, Conference Proceedings. 26 June 2016;2016-June.
12. Stork NC, Lenhart RL, Nemeth BA, Noonan KJ, Halanski MA. To Cast, to Saw, and Not to Injure: Can Safety Strips Decrease Cast Saw Injuries? *Clin Orthop Relat Res.* 2016 Jul;474(7):1543-52. PMID: PMC4887358
13. Smith CR, Vignos MF, Lenhart RL, Kaiser J, Thelen DG. The Influence of Component Alignment and Ligament Properties on Tibiofemoral Contact Forces in Total Knee Replacement. *J Biomech Eng.* 2016 Feb;138(2):021017. PMID: PMC4844247
14. Smith CR, Lenhart RL, Kaiser J, Vignos MF, Thelen DG. Influence of Ligament Properties on Tibiofemoral Mechanics in Walking. *J Knee Surg.* 2016 Feb;29(2):99-106. PMID: PMC4755512
15. Lenhart RL, Smith CR, Vignos MF, Kaiser J, Heiderscheit BC, Thelen DG. Influence of step rate and quadriceps load distribution on patellofemoral cartilage contact pressures during running. *J Biomech.* 2015 Aug 20;48(11):2871-8. PMID: PMC4536167
16. Lenhart RL, Kaiser J, Smith CR, Thelen DG. Prediction and Validation of Load-Dependent Behavior of the Tibiofemoral and Patellofemoral Joints During Movement. *Ann Biomed Eng.* 2015 Nov;43(11):2675-85. PMID: PMC4886716
17. Wille CM, Lenhart RL, Wang S, Thelen DG, Heiderscheit BC. Ability of sagittal kinematic variables to estimate ground reaction forces and joint kinetics in running. *J Orthop Sports Phys Ther.* 2014 Oct;44(10):825-30. PMID: PMC4297621

18. Lenhart R, Thelen D, Heiderscheit B. Hip muscle loads during running at various step rates. *J Orthop Sports Phys Ther.* 2014 Oct;44(10):766-74, A1-4. PMID: PMC4296582
19. Lenhart RL, Francis CA, Lenz AL, Thelen DG. Empirical evaluation of gastrocnemius and soleus function during walking. *J Biomech.* 2014 Sep 22;47(12):2969-74. PMID: PMC4228932
20. Maag AL, Laufer S, Kwan C, Cohen ER, Lenhart RL, Stork NC, Halanski MA, Pugh CM. Sensor-based assessment of cast placement and removal. *Stud Health Technol Inform.* 2014;196:259-61. PMID: PMC4097323
21. Lenhart RL, Thelen DG, Wille CM, Chumanov ES, Heiderscheit BC. Increasing running step rate reduces patellofemoral joint forces. *Med Sci Sports Exerc.* 2014 Mar;46(3):557-64. PMID: PMC3925193
22. Francis CA, Lenz AL, Lenhart RL, Thelen DG. The modulation of forward propulsion, vertical support, and center of pressure by the plantarflexors during human walking. *Gait Posture.* 2013 Sep;38(4):993-7. PMID: PMC3795949
23. Thelen DG, Lenz AL, Francis C, Lenhart RL, Hernández A. Empirical assessment of dynamic hamstring function during human walking. *J Biomech.* 2013 Apr 26;46(7):1255-61. PMID: PMC3645289