



Hemophilia and
Thrombosis Center
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

ME-WE-HTC
We create hope.

Curriculum Vitae Joanna Roybal, PT, DPT, PCS

1. Demographic Information:

- Current Position: Physical Therapist, Instructor, Hemophilia and Thrombosis Center (HTC)
- HTC Clinical office:
13199 E Montview Blvd. Suite 100
Aurora, CO 80045
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Email: Joanna.roybal@cuanschutz.edu

2. Education:

- 2007-2010 University of Colorado Denver, Aurora, CO Doctor of Physical Therapy
- 2003- 2007 Regis University, Denver, CO Bachelor of Arts in Biology

Scholarly Aims: I am a board certified pediatric physical therapist with a strong background in biomechanics. I am driven by curiosity around the orthopedic sequela of childhood onset disorders. My research goal is to further establish the role of computerized motion analysis (CMA) in physical therapy evaluation and treatment to provide evidence-based and technology-driven care to patients. More specifically, using CMA to identify, understand and treat symptomatic asymmetries (impairment level) and orthopedic sequela that cause decreased activities and participation in patients with life-long medical conditions- including hemophilia and childhood stroke. I am licensed in 3 states- committed to bringing expert care to diverse and often underserved locations. Finally, I desire to develop programs and treatment strategies grounded in this investigation, making evidence-based and technology-driven evaluation tools accessible to therapists in daily practice.

3. Employment:

- August 2021- present: Hemophilia and Thrombosis: University of Colorado SOM- Hemophilia and Thrombosis Center
- May 2018- August 2021: Texas Children's Hospital, Motion Analysis Lab, out-patient therapy, and Cerebral Palsy Program
- September 2011- May 2018: Children's Hospital Colorado- Center for Gait and Movement Analysis
- July 2013- August 2015: Children's Colorado- Outpatient Physical therapy
- January 2013- July 2015: Professional Pediatric Home Care
- August 2012- August 2013: Adam's 12 Five Star School District
- July and August 2010: Adam's Camp
- July 2010- July 2013: HealthOne Rose Medical Center
- August 2004- May 2010: Resident Assistant; Regis University

4. Academic Appointments:

- Instructor: University of Colorado, Hemophilia and Thrombosis Center, SOM, DOP.

5. Volunteer Leadership Positions:

- 2021- present: Co- President: University of Colorado Physical Therapy Alumni Association
- July 2010-May 2012: Secretary Colorado APTA Pediatric Special Interest Group
- April 2009- August 2010: President Colorado APTA Student Special Interest Group
- July 2008- July 2009: Treasurer Colorado APTA Student Special Interest Group
- August 2004-May 2010: Captain: Regis University Dance Team

6. Membership in Professional Organizations

- March 2023- present: National Strength and Conditioning Association Member
- 2011- present: Gait and Clinical Motion Analysis Society
- May 2007- present: American Physical Therapy Association
 - Pediatric Section Member - since 2009

7. Major Committee and Service Responsibilities

- 2022- present: Stroke Physical Medicine Rehab/Physical Therapy Focus group.
- 2022- present: HTC Epic Governance Board- HTC
- 2012- present: GCMAS: Reimbursement Committee Member
- 2021- present: HTC Stroke Parent Support Group

8. Licensure and Board Certification

- 2019: Fine Wire EMG Certification- March 2019
- 2018: APTA Board Certified Specialist in Pediatric Physical Therapy
- COPTL 10867
- MT PT PTP-PT-LIC-21957
- WY PT: PT-2247

9. Program Development:

- 2018-2021: Cerebral palsy program development lead at Texas Children's Hospital, The Woodlands
- 2022-present: Developing role for physical therapy in HTC stroke clinic

10. Quality Improvement:

- 2022: Defining the role of physical therapy in stroke clinic
- 2023: Assessing the effectiveness of PT screening of HTC patients with history of pediatric stroke to facilitate collaborative care with physical medicine and rehab

11. Teaching Record

- Presentations:
 - November 2022: Mountain States Hemophilia Network Regional Meeting, "Developmental Gait and Biomechanics"
 - May 2023: APTA Poster- Rocky Mountain Fall Conference, "When One Chronic Disease Obscures Another: Gait Changes in a Patient with Hemophilia B."
- Clinical Instructor:
 - University of Colorado- Hemophilia and Thrombosis Center:
 - Hosted students for Integrated Clinical Experience II in 2022 and 2023 (paid opportunity)
 - Rose Hospital
 - Hosted University of Colorado Physical Students CE II and CE IV: 2011, 2012, and 2013

- Children's Hospital Colorado:
 - Hosted University of Colorado Physical Therapy Student for CEI: 2013
- Guest Lecturer:
 - 2013-2014: Gait analysis lecture and lab for Dr. Cory Christiansen Movement Science II
- Teaching Assistant:
 - 2004-2007: General Biology I and II lab and lecture, Regis University
 - 2009: Motor Control and Motor Learning- Dr. Joanne Valvano, University of Colorado Physical Therapy Program
- Mentor:
 - 2022- Present: First Up Program, University of Colorado Physical Therapy Program

12. Grant support

- 2023: Hemophilia Alliance Foundation 2023 innovation grant: "Laser Labyrinth Proprioception Training: A novel method for improving ankle proprioception and preventing ankle joint bleeding in persons with hemophilia."
 - Aim: The UC HTC biomechanics team is requesting additional resources to launch a physical therapy home program designed to improve ankle proprioception in persons with bleeding disorders, and to analyze its impact. Ankle proprioception, the ability to feel the location and relative position of the ankle joint in space, has been shown to be impaired in persons with hemophilia (PwH) because of damage from bleeding events [1]. Losing proprioception is particularly problematic, as it can increase injury risk [2], leading to a cycle of repetitive bleeding. Ankle proprioception training has been shown to reduce the risk of ankle sprain [3]. Given the likely similar mechanisms behind ankle sprains and ankle bleeding in PwH, improving ankle proprioception should reduce ankle bleeding risk.
 - Role: Principal Investigator, \$50,000 over 1 year

13. Bibliography

Robertson C, Gaffney B, Mah N, Durkee H, Singer-Fox L, **Roybal J**, Funk S, Manco-Johnson M, Carollo J, Warren BB. Ground Reaction Force Asymmetry during Simulated Sports Activities to Better Understand Hemophilic Arthropathy. Gait and Clinical Movement Analysis Society Annual Meeting, 2022; Virtual.

Robertson C, Gaffney B, Mah N, Durkee H, **Roybal J**, Singer-Fox L, Funk S, Mah J, Schneider G, Johnson T, Hunt K, Manco-Johnson MJ, Carollo J, Warren BB. Using Motion Lab Ground Reaction Force Asymmetry Analysis to Better Understand Joint Damage in Patients with Hemophilia. University of Colorado Orthopedics Research Symposium, October 2022.

Mah J, Robertson C, Mah N, **Roybal J**, Singer-Fox L, Funk S, Manco-Johnson M, Carollo J, Gaffney BMM*, Warren BB*. Hemophilic Arthropathy and Increased Modeled Muscle Co-contraction during Squatting. World Federation of Hemophilia Conference 2023, Poster.

Mah J, Robertson C, Mah N, **Roybal J**, Singer-Fox L, Funk S, Manco-Johnson M, Carollo J, Gaffney BMM*, Warren BB*. Hemophilic Arthropathy and Increased Modeled Muscle Co-contraction during Squatting. Gait and Clinical Motion Analysis Society 2023, Podium Presentation.

Robertson C, Mah J, Mah N, **Roybal J**, Singer-Fox L, Funk S, Manco-Johnson M, Carollo J, Gaffney BMM, Warren BB. Normalized Symmetry Index in Simulated Sports Activities in Persons with Hemophilia and Healthy Controls. Gait and Clinical Motion Analysis Society 2023, Podium Presentation.

Warren BW, Caden Robertson¹, Joseph Mah¹, Niamh Mah¹, **Joanna Roybal**¹, Laura Singer-Fox¹, Sharon Funk¹, Marilyn Manco-Johnson¹, James Carollo², Brecca M. M. Gaffney¹, Knee Joint Loading during Walking and

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Updated September 19, 2023

Squatting in Patients with Hemophilic Arthropathy. Gait and Clinical Motion Analysis Society Annual Meeting,
Podium Presentation