

PhD Position: Rehabilitation Following Knee Surgery in Children with Cerebral Palsy

The Department of Biomechanics within the University of Nebraska at Omaha (UNO) is seeking a new PhD student for a project focused on biomedical rehabilitation for children with neurological disorders following knee flexion deformity surgery. This project is part of a clinical collaboration with Dr. Nickolas Nahm (pediatric orthopedics) at Children's Hospital & Medical Center Omaha. The applicant would join the research team of Dr. David Kingston, co-director of [UNO's Movement Analysis Core](#), in the [Biomechanics Research Building \(BRB\)](#), with 53,000 square feet of shared laboratory space, office, and collaboration space dedicated to translational biomedical research.

Project

Cerebral palsy (CP) is the most common cause of motor disability in childhood where irreversible changes to structures of the nervous system alters musculoskeletal development. Fixed knee flexion deformities (FKFD) are often present in children with CP that limit knee range of motion to a characteristic 'crouched' gait. Surgery is often required for FKFD treatment, but traditional approaches are highly invasive, limits independent walking for months, and requires substantial rehabilitation. We are investigating a promising, minimally invasive surgical technique as we do not have a fulsome understanding of the biomechanical mechanisms underlying post-surgical outcomes. This student will assist in the development and biomechanical evaluation of post-surgical rehabilitation interventions for these children to improve overall mobility and knee joint function.

Desired Applicant Profile

- MSc in kinesiology, physiotherapy, biomedical engineering, or another relevant field
- An interest in working with children 8-15 years of age, their families, and physical therapists
- Experience working with clinical populations or in rehabilitative settings would be an asset
- Experience in MATLAB, Visual3D, IMUs, metabolics, and/or pressure measurement would be an asset
- Speak and write fluently in English

Offer

The current position is fully funded for 2 years with the requirement applicants submit a competitive NIH F31 during this period. Funded graduate assistantships within UNO Biomechanics are available as an alternative source pending positive evaluation. **The start date is approximately July 1, 2021.** Applicants will be reviewed until the position is filled.

For additional information, please contact dkingston@unomaha.edu

David Kingston, PhD
Assistant Professor, Department of Biomechanics
Co-Director, [Movement Analysis Core](#)
University of Nebraska Omaha

UNO is a vibrant, metropolitan university in the state's largest city Omaha with an enrollment of approximately 15,000 students. In recent decades, the campus developed as a more traditional residential university supported by several new and beautifully appointed residence halls. UNO is classified as a doctoral research university in the latest Carnegie Classification of Institutions of Higher Education and the Athletic program competes in NCAA division I. UNO also has the distinction of being one of the nation's leaders in engagement and outreach with a 2015 Community Engagement Classification from the Carnegie Foundation. The campus is located in the heart of Omaha, a cosmopolitan city of more than 600,000 (1.2 million including the large Omaha metro area), which is known for its excellent public school system and strong economic base. The city is home to several racially, ethnically, and culturally diverse groups, and is characterized by myriad places to eat, live and shop.

UNO and the Department of Biomechanics has a strong commitment to diversity in its varied forms and to fostering an inclusive and welcoming learning environment where students, faculty and staff thrive and succeed. With a metropolitan mission, UNO serves a diverse student body with many first-generation college students and is actively engaged with the community in myriad ways. For additional information on our vibrant campus community, please see our recent ad in Chronicle of Higher Education, Growing With and Within our Thriving Community.

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