

PROJECT 1

FACULTY: Gannotti

PROGRAM: PT

TITLE: *Optimizing Motor Control and Muscle Performance in Children with Cerebral Palsy*

SUMMARY: The University of Hartford DPT students in collaboration with Shriners Hospitals for Children have established the BFit Power Based Program. Students will participate as leaders in this program to continue to optimize the exercises and develop new ones. We will be recruiting and evaluating athletes in BFit for changes in lean body mass and bone mineral density as part of an ongoing study. We have started a series of experiments to explore innovations in technology to use vibrotactile feedback or feed forward training to improve motor control in children with cerebral palsy. This involves use of EMG and a testing apparatus. Students will assist in testing participants in experimental paradigms for motor learning at the university and the hospital.

PROJECT 2

FACULTY: Certo + Gorack

PROGRAM: PT

TITLE: *The Mobility Score (M-Score): A Comparison of Community Based Older Adults and Older Adults Undergoing Sub-Acute Rehabilitation*

SUMMARY: This is part of the ongoing development of the M-Score. The M-score is a functional mobility test that was developed by our very own DPT students under the guidance of Dr. Certo and Dr. Gorack. In today's healthcare world it is vastly important for clinicians to have evidence based tools that can quickly be applied for patient assessment. Students involved in our current study have implemented modifications in the test based on their literature review and observations and are currently undergoing data collection. Students who choose this project will have the opportunity to experience testing of patients at a short term rehab facility and a community senior center with direct hands on involvement in order to continue the evolution of the M-Score.

PROJECT 3

FACULTY: Felmlee

PROGRAM: P&O

TITLE: *"How-to" Videos for Outcome Measures for the American Academy of Orthotists and Prosthetists (AAOP)*

SUMMARY: We will be organizing and producing up to 5 videos and fact sheets for quick reference by O&P clinicians. We will be working on grant writing, submission methods, video production/script writing, outcome measure validation/vetting. These videos will be submitted to the Outcome Measures Committee at AAOP.

PROJECT 4

FACULTY: Felmlee & Pratt

PROGRAM: PO & PT

TITLE: *P&O Sensors*

SUMMARY: We will continue to investigate ways to quantify changes in hemiparetic cerebral palsy gait with ankle foot orthoses (AFO). To do so we will build upon the foundation set by last year's research and explore the feasibility of using wearable sensors and the gait analysis walkway to identify movement patterns in children with cerebral palsy walking with and without AFOs. This work will help develop an algorithm to facilitate ease of use of wearable sensors and gait walkways in the clinic.

PROJECT 5

FACULTY: Pratt

PROGRAM: PT

TITLE: *Clinical Detection of Asymmetries: More than meets the Eye*

SUMMARY: We will continue to investigate ways to quantify lower extremity movement impairments in the clinic. To do so we will build upon the foundation set by last year's research and explore the feasibility of using wearable sensors to identify movement deficits in both healthy individuals and those following an ACL reconstruction. By providing clinicians and patients with objective information regarding movement quality, this work will help develop patient specific training programs and improve outcomes following surgery and/or rehabilitation.

PROJECT 6

FACULTY: Goodworth

PROGRAM: PT

TITLE: *Interactive video games for empathy and rehab*

SUMMARY: This project will use customized video games to 1) simulate movement disorders to increase education and empathy in people with healthy motor control and 2) enhance engagement in rehabilitation in people with movement disorders. Students will learn more about movement disorders, education strategies, technology, and sensors; and will likely collaborate with engineering students.

PROJECT 7

FACULTY: Lee

PROGRAM: P&O

TITLE: *limbWISE v2*

SUMMARY: Picture this: You are a new prosthesis wearer setting out on a journey to regain your mobility. The choices you make can be the difference between successfully adapting to life with a prosthesis, or the development of secondary complications like skin breakdown or abandonment of the prosthesis. With all the overwhelming options it is no wonder that prosthesis wearers report this period as one of the most frustrating times of their lives. That is where limbWISE comes into play. This easy to use problem-solving app helps new wearers work through the rigors of the decision-making process with a push of a button. Join the limbWISE team and help empower individuals in need during their time of difficulty!

PROJECT 8

FACULTY: Saavedra

PROGRAM: PT (6-8 students) and P&O (2 students)

TITLE: *Effect of optimal trunk support on academic engagement in children with disabilities.*

SUMMARY: Our goal is to evaluate 15 children (5 each in Early intervention, Preschool, and K-12) for segmental level of trunk control. We will then create optimal, customized positioning in a chair or stander that the child uses in the classroom and measure changes in academic engagement with and without optimal support. For this project we will collaborate with physical and occupational therapists and teachers in Hartford Public Schools, in addition to Special Education and Early Childhood faculty and students from University of Hartford.

PROJECT 9

FACULTY: Saavedra + Snowdon

PROGRAM: PT (6-8 students) and P&O (2 students)

TITLE: *Relation of Segmental Trunk Control to Integration of Sensory Systems for Posture and Balance.*

SUMMARY: Balance is a complex sensorimotor task that requires inputs from the vestibular system along with multisensory input from visual and somatosensory systems. Human infancy represents the most rapid learning of posture control in our lives and also coincides with the most rapid developmental phase of visual and vestibular function. The proposed project will quantify changes in sensory systems and trunk control in a longitudinal study of typical infants and infants with neuromotor deficits.

PROJECT 10

FACULTY: Wininger

PROGRAM: P&O

TITLE: *The Hartford Hand Project*

SUMMARY: The HH Project is now entering its 5th year. Each year we work as a team to identify a relevant, high-impact problem related to upper-limb prosthetics. Past projects have included: building out a customizable finger-and-hand assembly, testing user preferences for hand design, and identifying optimal Degrees of Freedom, and testing force myography as an EMG alternative for myocontrol. Next year's project can extend on previous works, or capitalize on the strengths and interests of our new team members.

NAME _____

Circle Program PT P&O

Please fill in project numbers...

Top Choice _____

Second Choice _____

Third Choice _____

Do not place _____