UNIVERSITY OF HARTFORD
DEPARTMENT OF REHABILITATION SCIENCES

DOCTORATE OF PHYSICAL THERAPY PROGRAM
DOCTORAL RESEARCH FINAL PRESENTATIONS Class of 2022
July 23rd, 2021
10:00am-12:00pm
Virtual Zoom Meeting

10:00-10:20am Telerehabilitation for People with Chronic Neurologic Disabilities
   Students: Amanda Bowen, Marissa Bowen, Cara Chrissis, Kristen DeCiantis, Adrienne Fisher,
         Bernardine Lapaan, Noelle Milnamow, Emily Quiros, Ronnie Rajeh, Justin Yandoli
   Mentor: Mary Gannotti, PT, PhD;

Description: People with chronic neurologic disabilities have higher risk for lack of physical activity and access to rehabilitation services, and telerehabilitation offers a solution. We performed a literature review in the form of a scoping review, and subsequently designed a telerehabilitation program delivered by DPT students. We assessed the feasibility of the program, could we recruit and implement a program. Results of implementation of the project and the status of the scoping review we have decided to publish will be shared.

**10:20-10:40am   A comparative study of the M-Score, Tinetti and MMSE: Validity and reliability in
         assessing fall risk and functional mobility.**
   Students: Nicholas Cardinale, Samantha Chase, Timothy Peterson, Olivia Tubis, Sydnee Wilson,
      David Wojtowicz
   Mentors: Walt Gorack, MSPT, DPT, GCS and Catherine Certo, PT, ScD, FAPTA

Description: Falls in older adults are a major public health concern due to high prevalence, treatment costs, and the impact on health outcomes and quality of life. Overall, falls are the leading cause of fatal injury and the most common cause of nonfatal trauma-related hospital admissions among older adults. The primary purpose of our study was to assess balance and fall risk in community-dwelling older adults. To assess overall fall risk, we used the M-Score and the Tinetti Performance Oriented Mobility Assessment (POMA). The secondary purpose of our study was to establish the reliability of the M-score compared to the Tinetti, a well-established fall risk assessment. The tertiary purpose of our study was to evaluate the correlation between external factors; cognition, comorbidities, and polypharmacy, and their impacts on fall-risk. We hypothesized that the results would help support that the M-Score is a valid tool for evaluating an individual's fall risk.

10:40-11:00am   Remote vs. In-Person Assessment of the SEBT and LESS: A Feasibility Study
   Students: Bamidele Adu, Anthony Cornelio, Logan Edwards, Miguel Farrell, Chaylea Finn, Aidan
   Fitzpatrick, Marissa Hagenbruch, Julia Hansen, Cain Hardisty, Brian Hunter, Melissa Menize, Kirill
   Skipalskiy
   Mentor: Kristamarie Pratt Branciforte, PhD, Meng

Description: Sports related injuries continue to be prevalent in college athletes despite efforts to reduce and prevent them over the years. While there are many different outcome measures used to analyze movement and mechanisms of injury, there is limited evidence on whether they can predict injuries and further more if

they can be assessed accurately in a remote environment. Therefore, the primary purpose of this project was to determine the effectiveness of dynamic tasks in predicting injury risk and the secondary purpose was to evaluate the validity and reliability of remote assessment when compared to in-person analysis. The two tasks chosen for this project were the Star Excursion Balance Test(SEBT) and Landing Error Scoring System (LESS). These dynamic tasks assess balance, postural control and landing mechanics, respectively. As a result, the COVID-19 pandemic there was a significant increase in remote assessment and therefore this project investigates the feasibility of remote assessment of these tasks as well.

11:00-11:20am Lateral Neck Flexor Endurance Scores For Individuals With And Without Systemic Hypermobility

Students: Zachary Almakias, Justin Arnold, Shayla Bailey, Thomas Gallagher, Bartlomiej Kolcz, Jessica Obey

Mentor: Brian Swanson PT, DSc, OCS, FAAOMPT

Description: There are many tests proposed to assess the endurance of the cervical musculature, however the majority assess bilateral function. The lateral neck flexor endurance test has been proposed to assess unilateral musculature function. To date, this test has only been reported in a single study assessing healthy individuals. Individuals with systemic hypermobility are reported to experience neck pain more frequently and may also experience more frequent headaches than individuals without hyperlaxity, perhaps due to decreased muscular endurance. Therefore, we hypothesized that individuals with hyperlaxity would demonstrate shorter hold times (decreased endurance) compared to healthy controls. To test this hypothesis, individuals with hyperlaxity were compared to age and gender matched controls to determine if there were differences in performance between groups for the lateral neck flexor endurance test. A secondary analysis based on reported headaches was also performed.

11:20-11:40am Static and Dynamic Balance Comparisions with the Transfemoral K2 Population Utilizing   K3 Componentry

Students: DPT: Kristen Rosado **MSPO:** Marlise Burtley, Jillian Fenton, Noah Freeman, Alesha Heacock, Katie Murphy

Mentors: Duffy Felmlee, MSPO, CPO, FAAOP and Adam Goodworth, PhD

Description: Examine the relation between static and dynamic reactive balance in a healthy control population as a starting point for understanding balance in K2 prosthetic ambulators. While research has been done on both static and dynamic balance, there is a lack of research showing a correlation between the two measures. Static balance testing was conducted on a perturbation platform with both anteroposterior and mediolateral perturbations. Development of measures to quantify static balance included a feedback control system model to determine sensory reliance, neural time delay, and the neural scaling of body sway to torque generation. Dynamic testing was conducted with ML perturbations delivered to a treadmill platform on which the patient was walking. Magnetic sensors and 3D motion capture systems were used to obtain kinematic data in both tests. It is hypothesized that subjects with better static balance (lower sway, higher scaling of sway-to- corrective torque, and lower neural time delays) will have a better dynamic balance performance (lower sway). Upon completion, this research will provide a useful baseline for future studies with K2 prosthetic ambulators and assist in the analysis of data for balance studies with microprocessor knees that are typically recommended for a higher functional level patient.