

UNIVERSITY OF HARTFORD

DEPARTMENT OF REHABILITATION SCIENCES

DOCTOR OF PHYSICAL THERAPY PROGRAM DOCTORAL RESEARCH FINAL PRESENTATIONS

DPT Class of 2025
November 1st, 2024
2:00-4:00pm
Wilde Auditorium

2:00-2:20pm Presentation 1: Hawks in Motion High Intensity Exercise for People with Neurologic Disability

Students: Chase Cole, Bethany Ladd, Leila Miller, Nicole Richards, Samantha Weinstein, Kayla Zigmont
Mentors: Mary Gannotti, PT, PhD; Jillian Kossbiel, DPT, NCS; Erika Ozdemirer, DPT, NCS, Donna Snowdon, PT, DPT, MS, Linda Yamamoto, PhD

This study reports on an implementation project for a high intensity community-based exercise program for neurologic disabilities. This project used Plan Do Study Act cycles over 5 semesters to assess the feasibility, logistics, safety, and efficacy of a high intensity program delivered twice a week by graduate physical therapy students. The exercise program has adapted recommendations from the American Academy of Neurologic Physical Therapy and the American College of Sports Medicine.

2:20-2:40pm Presentation 2: Eccentric Exercise and Rhabdomyolysis

Students: Chris Brodsky, Andrew Cloutier, Logan Deros, Daniel Dizuzio, Katie Josberger, Kelsey Mathews, Arijana Tufekci, Cory Wolski
Mentor: Xin Ye, PhD

This study consists of two systematic reviews with the purposes of 1) introducing exercise-induced (exertional) rhabdomyolysis with the key diagnostic tests, and 2) examining the effects of eccentric exercise on muscle damage and recovery in athletic populations. A total of 26 and 22 reports were included in the two reviews, respectively. Creatine kinase level is the main measurement for diagnosing rhabdomyolysis, however, a very large range was observed from the studies examined. Therefore, a secondary measurement should be considered for diagnostic purposes. It is also observed that athletes or resistance-trained individuals are generally less susceptible to eccentric-induced muscle damage, due to their training adaptations. Strategies for eccentric exercise training are also presented in this study to minimize muscle damage and facilitate recovery.

2:40-3:00pm Presentation 3: Acute Effects of Reactive Agility Training on ACL Injury in Collegiate Athletes

Students: Hayden Burbank, Teagan Devoe, Lexie Doran, Brianna Hanlon, Gabriella Lamoureux, Angie Louis, Chloe Phillips, Meghan Savinelli
Mentor: Kristamarie Pratt, PhD, MEng

This pilot study aimed to investigate the relationship between the acute effects of reactive agility training and ACL injury risk factors in collegiate athletes. Reactive agility training (RAT) has been measured and tested as a means to assess an athlete's physical, technical and cognitive quality. In addition, RAT has been found to improve reaction time, decrease injury prevalence and predict an athlete's performance, which was the intent of this study. Biomechanical risk factors associated with non-contact ACL injuries include hip adduction, hip internal rotation,

and knee valgus. Common knee moments such as external rotation, abduction and anterior tibial shear have also been reported to be correlated with non-contact ACL injuries. The idea of the acute effects of performing reactive agility training directly before a game situation has been questioned in which there is a lack of research. It was our goal to analyze the mirror drill to determine if it will decrease ACL injury risk factors in collegiate athletes which can then be used in a pre-game warmup.

3:00-3:20pm Presentation 4: The EMU Study: Efficacy of Matched or Unmatched Manipulation on Neck Pain

Students: Mary Cimen, Cara DiMercurio, Andrew Dunne, Michael Dunne, Chase Hubbard, Brendan Kirck, Rowan Nadeau

Mentor: Brian Swanson, PT, DSc, OCS, FAAOMPT

The study reports the results of a randomized clinical trial to answer the research question: “Does matched or unmatched level of manipulation based on the cervicothoracic differentiation test (CTDT) result in greater improvements in pain and range of motion in adults with neck pain?” The CTDT has been proposed to help determine the regional source of an individual's neck pain (either cervical or thoracic spine), and both cervical and thoracic manipulations have been proposed as effective treatments for neck pain in clinical practice guidelines. Therefore, the primary goal of this study was to determine if there were differences in response to manipulations that were either matched or unmatched based on the results of the CTDT. The outcomes of this study will help improve clinical decision making for selection of appropriate interventions for individuals with neck pain.

3:20-3:40pm Presentation 5: Reliability Testing of Diagnostic Ultrasound Imaging, Foot Strength Dynamometry, and Other Clinical Tests Used for Plantar Fasciitis

Students: Sofia Calvo, Nicole Carter, Jillian Michaud, Nicole Morris, Erica Silver, and Kayla Zinser

Mentor: Sarah Ridge, PhD

The purpose of our research is to investigate the reliability of various data collection methods, including foot strength dynamometry, diagnostic ultrasound imaging, arch height index, and the 6-minute walk test. The results of our testing will help confirm the repeatability of the tools between individuals and groups, giving us interrater and intra-rater reliability. We collected data on five students from the University of Hartford two times, one week apart. We obtained good to excellent reliability, demonstrating that these methods can be used repeatedly with different administrators and with confidence. Improvements for foot strength testing can be made through increased training in test administration, data analysis, and participant experience. This information overall assesses the tools being used in a larger study about plantar fasciitis and best treatment.

3:40-4:00pm Presentation 6: The Combined Effect of Transcutaneous Electrical Nerve Stimulation and Transcutaneous Auricular Vagus Nerve Stimulation on Pressure and Heat Pain Thresholds in Pain-Free Subjects: A Randomized Cross-Over Trial

Students: Noura Awad, Christopher Bellino, Katie Bray, Heidi Rosentrater, Josh Roy, Camryn Tate

Mentor: Richard Liebano, PhD

The purpose of our research is to investigate the effects of combining both TENS and TaVNS and exploring their impacts on pressure and heat pain thresholds in healthy subjects. We completed a randomized cross-over trial with 30 participants. The research consisted of two treatment sessions with a one-week washout period. Our study found a change in pressure and heat pain threshold over time, however there was no significant difference in pain threshold between the two groups.