

UNIVERSITY OF HARTFORD

DEPARTMENT OF REHABILITATION SCIENCES

DOCTORATE OF PHYSICAL THERAPY PROGRAM SCIENTIFIC INQUIRY FINAL PRESENTATIONS

November 7, 2019

12:15-2:00

Wilde Auditorium

12:15-12:30 The Effects of Assistive Jump Training on Vertical Jump Height

Students: Emmanuel Caicedo, Marisa Ferguson, Jacob Goodspeed, Andrew King, Anna Lonardo, Dina Okada, Eddie Pomales, Jared Scoville

Mentor: Kristamarie Pratt, PhD, MEng

This study looked at the effect of assistive jump training on vertical jump height and power production in female NCAA D1 volleyball players. We did this by constructing an apparatus that would unweight the players while they are jumping. Our goal was to investigate the hypothesis that faster muscle recruitment would lead to an increase in leg power, resulting in a higher vertical jump.

12:30-12:45 Comparison of Lower Extremity Involvement in Timed Submerged Swimming (SCUBA) in Swimmers with Lower Extremity Limb Loss

Students: Okechuku Ekwuabu, Aubrey Koehler, Kelsey Marchetti

Mentors: Kristamarie Pratt, PhD, MEng; Duffy Felmler, MSPO, CPO, FAAOP

This research aims to quantify and compare leg and pelvis movements in swimmers with lower extremity limb loss during submerged swimming (SCUBA) with and without the use of swim prostheses. The data collected will be used to inform on the development of an improved swim prosthesis that is able to transition from water to land.

12:45- 1:00A Comparative Study of the M-Score, 4-Item Dynamic Gait Index and Functional Reach Test: Validity and Reliability in Assessing Fall Risk and Functional Mobility

Students: Jessica Binkowski, Cailyn McDonnell, Zachary Hodges, Christian Librizzi, Sarah Oyenein, Alejandro Tobon, Brittany Wheeler

Mentors: Dr. Catherine Certo, ScD, PT, FAPTA; Dr. Walt Gorack, PT, MSPT, DPT, GCS

The purpose of this study is to compare the M-Score mobility test to other clinically reliable and valid fall risk outcome measures which uses essential elements from multiple reliable and valid outcome measures to evaluate mobility performance essential in this population. The relationship between fear of falling and cognition in the geriatric population with falls will also be assessed to evaluate their effect on this population and how it impacts outcome measure scores.

1:00- 1:15 Visual Feedback Improves Balance Control...Until it Doesn't.

Students: Sara Fitzhugh, Amy Kratzer, Makenna Lommori, Jernique Robertson, and Mark Rowley

Mentor: Adam Goodworth, PhD; Dr. Sandra Saavedra MS, PT, PhD

In order to maintain an upright sitting position we tend to rely on our three balance systems which are proprioceptive, visual, and vestibular systems. What happens when one of those gets taken away? This project investigates visual contributions, while a subject's ability to use proprioception is diminished. In particular, this project highlights the contribution of visual biofeedback feedback to trunk control in healthy adults.

1: 15-1:30 Effect of optimal trunk support on academic engagement of children with moderate to severe disability.

Students: Kelly Blochlinger, Alyssa DeSanti, Katie Hancock, Ashley Klein, Toni Penta
Mentor: Sandra Saavedra MS, PT, PhD

Over the last 10 years, it has been shown that typically developing children gain head and trunk control segmentally. In children with neuromuscular disabilities, head and trunk control may never fully develop, leading to the inability of these children to independently manage their posture. Currently, adaptive equipment in the classroom isn't adjusted using segmental principles. This study evaluates optimal positioning based on segmental principles of trunk control on the educational behaviors of children with neuromuscular disabilities.

1:30- 1:45 Effect of trunk support or postural contexts on upright control and function

Students: Josh Breighner, Kevin Dellavecchia, Caline Gin, Brian Huynh, Samantha Johnson
Mentors: Sandra Saavedra MS, PT, PhD; Donna Snowdon PT, DPT

Non-ambulatory children often present with inadequate trunk control for independent sitting and functional movements of the upper and lower extremities. Positioning devices are frequently used in this population to ensure stability and safety in the upright context. This study evaluates the impact of several postural support devices on a child's ability to produce efficient, functional movement and participate in age-appropriate activities.

1:45-2:00 Training Anticipatory Control among Individuals with Cerebral Palsy

Students: Alex Amaya, Billy Cotsalas, Dianna Olojo, Bradley Russell, Mike Turovac, Alyssa Vereneau, Amanda Zacchi
Mentors: Mary Gannotti, PT, PhD; Matteo Bertucco, PhD

Anticipatory control among individuals with neurodevelopmental disabilities may be delayed, and the responses not strong enough, not in the right direction, and overall not effective. Training anticipatory postural reactions is possible with a medicine ball toss and healthy young adults. This project evaluates the impact of a training program that's quick and easy, stopping or catching a medicine ball, on anticipatory postural reactions among adolescents and young adults with autism, cerebral palsy, and Down's syndrome. We present initial cases recruited.