

Class of 2011

Thesis

Evaluating the Effectiveness of the Interactive Metronome® in Improving Life Satisfaction and Reducing Levels of Aggression and Loss of Attention in Marines with Mild Traumatic Brain Injuries associated with Post-traumatic Stress Disorder Symptoms: A Pilot Study of Protocols



Michelle McBride and Kelly Ridenhour

The purpose of this study was to help validate the protocols created for the Interactive Metronome® developed for clients with TBI and/or PTSD. Protocols were established matching IM routines in conjunction with TRX exercise routines. These were then tested on two male and two female healthy clients. The data collected was done using the IM Long Form, 9 Hole Peg test, TEA, COPM and Overt Aggression Scale. Percentage of change was then compared between instruments and individuals for positive efforts gained. Data analysis indicates that the use of the IM in conjunction with the Physical Challenge of the TRX provides a positive change maintaining or lowering stress/aggression levels; and also improves attention. The IM protocols and TRX are effective instruments and interventions to be used in conjunction and future research should anticipate favorable outcomes with mild TBI cases. *Michelle and Kelly are completing a thesis under the direction of Dr. Leonard Trujillo.*

Effects of the Fine Motor and Early Writing Program on the Fine Motor Skills of Children in Head Start



Brittni Mattocks

The purpose of this study was to investigate the effectiveness of a structured handwriting readiness program to improve the fine motor skills of preschool children attending Head Start. Pre- and post-testing of an experimental classroom and a control classroom was completed using the fine manual control and manual coordination composites of the Bruininks-Oseretsky Test of Motor Proficiency Second Edition (BOT-2). The experimental classroom was exposed to the Fine Motor and Early Writing curriculum during center time in approximately four 10 minute increments, twice a week for 16 weeks. Preliminary data analysis indicates that the experimental class had an increase greater than the control class in mean total point scores between pre-test and post-test in the fine motor integration and manual dexterity subtests but not for upper limb coordination or fine motor precision. The

results suggest that the Fine Motor and Early Writing program has a positive effect on the development of fine motor integration and manual dexterity skills in preschool children. Further data analysis will be conducted to determine significance between pre-test and post-test scores. *Brittini is completing a thesis under the direction of Dr. Denise Donica.*

The Use of a Personal-Fitness-Device in Conjunction with Online Social Networking as an Effective Delivery System for Occupational Therapy Community Practice to Enhance an Individual's Personal Occupation and Self-efficacy



Chelsea Kapp

The purpose of this study was to evaluate the use of an online social network system in conjunction with a fitness-tracking-device and their potentially positive effects on maintaining personal motivation and sense of self-efficacy over time. Data was collected through a personal fitness device providing data on steps, distance, and active score. Participants posted on a message board a minimum of two times per week and posts were recorded daily. Pre-Interim and Post surveys were e-mailed and completed by participants. The survey measured coping with stress, personal well-being, risk-taking, nutrition, family health, body maintenance, work/environment, life events, values and creativity. Data analysis indicated that the use of a personal fitness device in conjunction with online social networking positively influenced personal occupation and self-efficacy. Survey results comparing responses between the initial surveys with the final surveys indicated sustained or improved personal fitness levels. No one single device or mechanism can account for motivation over a notable period of time. *Chelsea is completing a thesis under the direction of Dr. Leonard Trujillo.*

Characteristics of Volunteer Lay Leaders who Show Longevity in Teaching Matter of Balance®



Caroline Fountain

This study was designed to explore the characteristics of individuals who volunteer to teach the Matter of Balance® program, an evidence-based health promotion program that relies on trained volunteer lay leaders to

educate older adults on the fear of falling. A developed survey was sent to 206 volunteer lay leaders who reside in North Carolina and distributed through email using the East Carolina University Qualtrics survey software. The response rate was 44% (N=90). The study found no statistical significance related to the longevity (number of years trained/teaching the course and the number of courses taught per year) of participants involvement in volunteering as a lay leader or characteristics of the participants. The results show individuals who chose to teach Matter of Balance® are not doing so for a specific purpose or for an indefinite period of time, although the characteristics found provides new insight into selecting appropriate people to teach this program in the future. *Caroline is completing a thesis under the direction of Dr. Jane Painter*

Implementing the Alert Program® into a Kindergarten Curriculum using the Response to Intervention Model



Rebecca Buchanan

The purpose of this study was to see if activities and strategies from the Alert Program®, designed to operate within tier one of the Response to Intervention model, enhanced kindergarten sensory processing abilities to attend in the classroom. The study also determined if young children began to self-identify specific Alert Program activities and strategies that helped their level of alertness to be successful in the classroom. Using a quasi-experimental, pre- post design, researchers examined student performance using three different pediatric assessments before and after receiving Alert Program activities and strategies in two kindergarten classrooms, and compared these to a third classroom cohort not receiving the program. Statistical analysis found that there were significant changes in functional communication (0.043), task behavior/completion (0.007), positive interaction (0.006), and personal care awareness (0.003) categories of the School Functional Assessment compared to the control group. This study supports the fact that the Alert Program® can be used successfully with kindergarten aged students to improve cognitive behavioral tasks and increase appropriate arousal states. The long term benefits of these observations remains to be established. *Rebecca is completing a thesis under the direction of Dr. Carol Lust.*

Master's Projects

Effectiveness of The American Arthritis Tai Chi Program® for Fall Prevention Among Seniors Living in a Continual Care Facility



Robin Groth and Courtney King

This project examined the impact participating in a 30-minute tai chi class for 16-weeks, twice a week, has on decreasing fall risks, fear of falling, and activity level. The TGUG, COPM, ABC, and CHAMPS were administered to 18 subjects, with a mean age of 82.56 years, who lived independently at Cypress Glen Retirement Community. Significance was found using the Paired Samples T-Test between the pre and post-test TGUG scores ($p=0.03$). Using the Wilcoxon Signed Ranks Test to examine the CHAMPS assessment, there was a significant increase in the sedentary activities of reading and playing cards ($p=0.02$; $p=0.02$) and in the social activity of visiting with others ($p=0.05$). There was no significant change in the level of participation in physical activity. This study found involvement in the tai chi class helped to decrease the subject's risk of falls and increase their level of participation in sedentary and social activities. *Robin and Courtney completed this project under the direction of Dr. Jane Painter*

Driving Through the Lifespan: Using Driving Simulator for Occupational Therapy Practice.



Erin Strong, Courtney Smith, Hillary Morris, and Stacey Crane

Driving simulation offers the potential to be used for assessment and rehabilitation of driving skills and abilities. Specifically, standardized scenarios were analyzed for difficulty and their impact on physiological stress responses. Eighteen experienced adult drivers rated at least four scenarios while being monitored for heart and respiration rate. Difficulty of the scenarios was ranked by questionnaire and drivers were monitored for driving errors. Heart and respiration rate were objectively measured in order to examine the physiological stress response with occurrence of critical events during the scenarios. Data analysis indicates that the designed scenarios were mostly consistent with conceptual model of difficulty, however at least one scenario was judged inconsistent within the model. Differences were not found between different age groups or gender in measuring driving behaviors. Stress response was consistent across age and gender with critical events. These studies support the development of using simulation for occupational therapy assessment and rehabilitation. Young and middle age adults appear to perform similarly both in driving behaviors and physiologically with driving simulation. Thus, the data can be used to develop a basis for standardized comparisons of normal drivers and medically at risk drivers. *Erin, Courtney, Hillary, and Stacey completed their projects under the direction of Dr. Anne Dickerson*

Is There a Relationship Between an Individual Participating in the A Matter of Balance® Program and a Reduction in Environmental Hazards in the Participants' Homes?



Allison Kiser

To determine if there is a relationship between an individual participating in the evidence-based fear of falling A Matter of Balance® (MOB) program and a reduction in environmental hazards in the participants' homes. Data were collected using MOB's Home Safety Checklist to obtain a score of home hazards both before and after the eight week program. The participants were four community-dwelling females between the ages of 50-80 and attended all classes. Data analysis showed all participants had a decrease in hazards post-intervention with an average of 28.3% reduction of environmental hazards. The majority of hazards were found in the bathroom (30.8%). A decrease in hazards was found in the entry, all area, and kitchen categories with no change in other categories. The results support previous research on the usefulness of a multi-factorial fall prevention program to reduce home hazards as well as findings that bathrooms are an area of high risk for hazards related to falls. *Allison completed this project under the direction of Dr. Jane Painter.*

Effectiveness of Handwriting Readiness Programs on Postural Control, Hand Control, and Letter and Number Formation in Head Start Classrooms



Amy Goins and Leslie Wagner

The purpose of this study was to investigate the effects of handwriting readiness programs on handwriting related skills in Head Start classrooms. Handwriting Without Tears® and Fine Motor and Early Writing Pre-K Curriculum were each implemented in separate classrooms and compared to a single control classroom who received no additional handwriting readiness intervention. For sixteen weeks, both experimental classrooms received additional small group handwriting instruction twice a week in during center time. Participants in all three classrooms were pre- and post-tested using the Shore Handwriting Screening for Early Handwriting Development. Comparison of the mean changes in score indicates positive changes for all three classrooms. The changes for Handwriting Without Tears® and Fine Motor and Early Writing were greater than the control but not statistically significant. Results of the study suggest that handwriting readiness programs are a beneficial addition

to the Head Start center time. Suggestions for further research include a follow-up study for long-term effects and a larger sample to elicit statistically significant changes. *Lesley and Amy completed this project under the direction of Dr. Denise Donica*

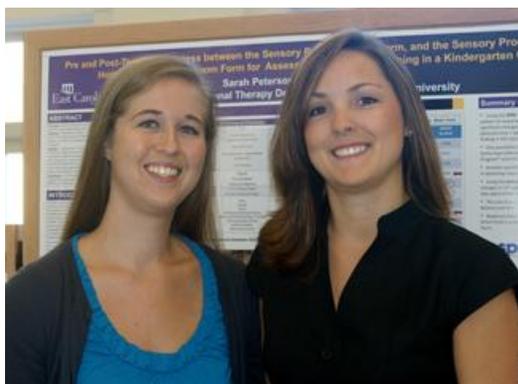
The effects of therapeutic horseback riding on sensory processing dysfunctions in children with autism spectrum disorders.



Brittany Gordon

The purpose of this study was to explore the effects of therapeutic horseback riding on behaviors of children with autism spectrum disorders. The objective was to determine if the intervention impacted any behaviors. Data was collected in two methods. Parents completed a standardized assessment as a pre and post measure of the 15-week riding program. An observational checklist was also developed to document each child's individual riding session. Participants were five boys, ages 4-10 and registered in the Rocking Horse Ranch's program. All the boys had a diagnosis of autism spectrum disorder. Data from the lessons was analyzed in graphic format. All five children demonstrated areas of improvement, including posture, communication, participation, and self-coping mechanisms. Data will be analyzed from the parents' standardized assessment upon completion of the spring program. The results suggest that programs such as therapeutic riding may be an effective and positive intervention for autism spectrum disorders. *Brittany completed her project under the direction of Dr. Anne Dickerson.*

Pre and post test effectiveness between the sensory profile-short form, and the sensory processing measure – home form and classroom form, for assessing sensory processing in a kindergarten classroom.



Sarah Peterson and Amanda Thomas

The purpose of this study was to compare several instruments in assessing a kindergartener's sensory processing abilities and limitations. The Sensory Profile – Short Form (SPSF), and the Sensory Processing Measure, both Home Form and Classroom Form (SPMH and SPMC) were completed for 27 kindergarten students, ages 4-6, before and after completing 6 months of weekly one hour multi-sensory activities based on the Alert Program®. Participation in the program was associated with significant improvements in Auditory Filtering (0.003), and Low Energy/Weak (0.034), and approached significance in Under-responsive/Seeks Sensations (0.054) and total score (0.057) categories of the SPSF. Total performance (all categories) using the Sensory Processing Measure was significantly

improved when assessed by teachers (Classroom Form, 0.010) but not when assessed by parents (Home Form, 0.485). However, there were also significant differences between how the parents and teachers assessed the baseline status, depending on the classroom setting. Results suggest that the SPSF and the SPMH and SPMC each have varying sensitivity in measuring sensory processing abilities. In addition, the classroom setting may influence scoring of SPMH and SPMC by parents and teachers alike, and can skew overall assessment. *Sarah and Amanda completed this project under the direction of Dr. Carol Lust.*

Describing the protocol design process of the Interactive Metronome® Study.



Jamie Joyner

The purpose of this study was to develop a set of protocols that combined the Interactive Metronome® (IM) and TRX® Suspension exercises for members of the Wounded Warrior Battalion at Camp Lejeune, North Carolina who have sustained a mild traumatic brain injuries. A series of meetings were held by IM® trained professionals to develop the sequence of TRX® routines reflective of the rhythmic patterns of the IM routines. Twelve different sessions were compiled and designed to be completed during an eight week intervention time frame. Protocols have been developed that incorporate the IM® with the TRX®. The TRX® exercises developed, compliment the IM® exercises for the proposed protocol. The addition of the TRX® produces an increased neurological challenge to the client's system where the IM® serves as a foundation for that change to occur. In addition the physical nature of the TRX® adds a sense of competition between the two clients who are completing each session jointly. The protocols developed for this study have been reviewed by experts in the field and are currently undergoing comparative testing and validation purposes. The expected outcome is that the combined routines provide a positive and challenging therapeutic atmosphere within the context of members of the military service members who have sustained mild TBI. *Jamie completed this project under the direction of Dr. Leonard Trujillo.*

Occupational Therapy's Role With End of Life Clients: A Case Example



Helen Houston

This poster discusses such as case and how using the Model of Human Occupation, an occupational therapy practitioner participated in the care of a person at the end of their life. In this case the client was 74 years old and

was a widow with no children. She was an active participant in her community and church, however due to the absence of a spouse or children to support her, it was a challenge for this therapist to meet her needs when she was diagnosed with Leiomyosarcoma. Due to the holistic nature of our profession, we as occupational therapists, have a unique contribution to make: to modify the individual's environment, by evaluating the missing "pieces" which might limit the client's ability to remain in their own home, and ensuring these "pieces" are implemented, so that they can meet this goal. Unfortunately, our health care system does not always support this idea or possibility. Occupational therapists must listen to their clients and if needed, become advocates for the client who selects quality of life over quantity of time. This poster will illustrate how, in this case, the therapist became an important advocate for the client and will explain the value and gain for the therapist, by participating in such a process. *Helen completed this project as a course requirement for her post-professional degree.*