

## SCHOLAR Day Posters Program Information 2019

### 9-9:45 AM - Poster Session I, Giese Center for the Performing Arts

**Matthew Bringman    Athletic Training    Dr. Sonia Wehrlin**

"Femoroacetabular Impingement Syndrome"

Femoroacetabular impingements have been identified as a common cause of hip pain. This injury presents in the form of a cam lesion, pincer lesion, or more commonly, a combination of both. Lesions cause abnormalities between the bones of the hip and can lead to further injury, such as labral tear. Patients tend to present with decreased range of motion and decreased strength upon physical examination. Further evaluation, through the use of various imaging techniques, will lead to the discussion of treatment options, such as surgery, drug therapy, and physical rehabilitation with surgical interventions being the best option. After reviewing the research, the goal of this paper is to educate clinicians on why surgery is the only way to correct the bony abnormalities and restore the hips normal function, and this ultimately leads to a decrease in pain and an increase in functional activity.

**Lauren Entwistle    Physician Assistant Studies    Prof. Vanessa Worley**

"Using Intravenous Ketamine to Rapidly Reverse Acute Suicidal Ideation in the Emergency Department"

What if there was a way to prevent one of the leading causes of death in America? According to the National Institutes of Mental Health, suicide takes over 45,000 lives every year. The deep suffering of individuals who contemplate suicide is indescribable. Currently, however, there are no approved medications for suicidal thoughts that work quickly enough to help people in crisis. Ketamine, a drug typically used as an anesthetic, is being investigated as an agent to reduce acute suicidal ideation. This paper is a systematic review investigating the latest research on administration of intravenous ketamine in the setting of the emergency department as treatment for acute suicidal ideation in adults. Findings suggest that this treatment is effective in reducing suicidal thoughts in a matter of hours, which could be immensely beneficial for emergency medicine and psychiatric health professionals and their patients. Is ketamine the solution to the problem of suicide?

**Andrea Fry    Physician Assistant Studies    Prof. Vanessa Worley**

"When Time is Brain: The Innovation and Implementation of Telemedicine for Quicker Acute Stroke Care"

By the time you finish reading this sentence, another person has suffered a stroke. It is now a race against the clock. According to the American Stroke Association, strokes are the leading cause of long-term disability in the US, leaving a detrimental impact on both patients and caregivers. With the utilization of telemedicine, a neurologist can be electronically present within seconds, in theory reducing a critical hurdle in stroke care: time. A systematic review of literature was conducted using articles within the last five years to answer my question on

whether the implementation of telemedicine can improve door-to-treatment time, with focuses on the prehospital setting and feasibility. An evidence-based practice guideline on the best utilization of telemedicine in stroke care will be produced from the results. Can “FaceTiming” a stroke patient make an impact on treatment time and long-term patient outcomes? Do not waste a second and come find out!

**Cassandra Gillespie    Physician Assistant Studies                    Prof. Vanessa Worley**  
"Is it 'Just for Sport?' The Negative Physical and Psychological Effects of Early Sport Specialization in the Pediatric Population"

Could specializing in a sport early in childhood or adolescence have negative physical or psychological effects on athletes? Research says ‘yes’ to both! It is increasingly common for athletes to specialize in a sport early in their athletic careers in an attempt to gain greater skill and achievement, and increase their chances of making it at the next level. Parents may focus on the potential positive outcomes and see no danger in year-round participation. This study utilizes a systematic review of literature to analyze the risk of injury and negative psychological outcomes in athletes with early sport specialization. Evidence identifies increased risk of overuse injuries. Also, these athletes often experience burnout which ties to chronic stress and anxiety, as well as decreased sense of accomplishment. Young athletes, parents and healthcare providers need to know these potential harms. Is it really worth it to leave it ALL out on the field?

**Mackenzie Glaros    Nursing                    Prof. Karen Towne**  
"What Is the Effect of Lavender Aromatherapy on Pain Perception During Labor?"

Inhaled aroma essence has been shown to increase hormones that bind to opiate receptors to decrease pain like morphine. Previous research has been done on how lavender reduces pain after cesarean sections but never during the laboring process. This led to the question if lavender aromatherapy decreases pain perception in women undergoing vaginal birth using no other pharmacological or nonpharmacological methods. CINAHL and PubMed were used and after eligibility and content review, two articles were chosen. Both used randomized control trials and utilized the Visual Analog Scale (0-10 pain rating scale). The results showed a decrease in pain after the lavender was administered (Kaviani, Azima, Alavi, & Tabaei, 2014; Yazdkhasti, & Pirak, 2016). Many medicines cannot be given for pain during labor because they cross the placental barrier and cause harm to baby. Lavender offers a noninvasive option for pain relief with no adverse effects noted for mom or baby.

**Alicia Gnecco                    Physical Therapy                    Dr. Megan Salvatore**  
**Lindsay Abrams                Physical Therapy**  
**Kayla Maretich                Physical Therapy**  
**Symone Reed                    Physical Therapy**  
**Rocco Sandrella                Physical Therapy**

"The relationship between ankle range of motion and gait parameters in fallers and non-fallers in the aging adult population"

Falls are the leading cause of elderly admission to hospitals and skilled nursing facilities. After the occurrence of a fall, the likelihood of the individual falling again is further increased. Identifying the components that contribute to increased fall risks prove pertinent to preventing falls in the elderly. Our research is a sub-study of the STAND Initiative, which investigates the effects of physical activity on the fall risk of the aging population. We focused on the relationship between characteristics of walking and ankle flexibility. The characteristics of walking were gathered with a cell phone application that analyzed the results from the 400-meter walk test. The ankle flexibility was measured using a cell phone application. With our gathered results, we hope to apply these findings in a clinical setting by improving walking characteristics and lower extremity flexibility to reduce the risk of falls in the elderly population.

**Matthew Harris**      **Exercise Science**      **Dr. Lonnie Lowery**  
**Jason Vansickle**      **Exercise Science**  
**Robin Putman**      **Exercise Science**

"The Effects of Gender on Psychometric and Epinephrine Responses to Pre-Exercise Coffee"

Caffeinated drinks, including coffee, are frequently ingested before exercise for their ergogenic effects. The purpose of this study was to examine gender differences in alertness and epinephrine in response to coffee plus exercise. We hypothesized alertness and epinephrine responses to coffee plus exercise would not differ between the sexes. In a randomized double-blind crossover design, 37 fasted college-aged students (19 male;18 female) consumed two packs, 525 ml, of Starbucks VIA® instant coffee (VIA) or an identical decaffeinated coffee (DCF) over a 30 minute period. The subjects completed six repetitions of smith machine bench press, squat (50% one-rep max), and three maximal vertical jumps. Subjective alertness (likert scale 1-5) was recorded pre and post exercise, as was antecubital venous draws in a subset (6 men;4 women), to measure epinephrine (EPI) concentrations and analyzed using an Enzyme-linked immunosorbent assay (ELISA)(Alpco, Salem, NH). Results will be presented on presentation day.

**Lauren Herubin**      **Chemistry**      **Dr. Jeffrey Buth**  
**Rachel Tinkey**      **Biochemistry**  
**William Clay**      **Chemistry**

"Impact of Ground Size and Brew Method on the Extraction of Chlorogenic Acid, Caffeine, and Caffeic Acid for a Cup of Coffee"

Coffee is a beverage consumed widely around the world for the intake of caffeine and chlorogenic acid, an antioxidant compound. These compounds and caffeic acid, a main degradation product of chlorogenic acid, can be extracted with water during the brewing process of coffee. Little research has been conducted so far on the effect of the brew method and coffee ground size on the extraction of caffeine, chlorogenic acid and caffeic acid from coffee beans. In this study, we compare the brew methods of Keurig, French Press, Espresso and Pour Over with the ground sizes of course, medium and fine, to determine the

concentration of caffeine, chlorogenic acid, and caffeic acid in brewed coffee via high performance liquid chromatography. The resulting analyte concentrations align with literature values and support our hypothesis that the smaller ground sizes will produce a greater concentration of the analytes.

**Hunter Mattern      Neuroscience      Dr. Kristine Turko**

"(Mis) Diagnosis: Gender-Specific Behaviors Associated with Diagnosing Autism Spectrum Disorder"

It has recently been recognized that young female patients (3-4 years old) are commonly misdiagnosed with anxiety and other mood disorders when their actual diagnosis is autism spectrum disorder. The purpose of this study is to examine the different symptomatic behaviors that are displayed in boys and girls with autism. Observations were held at The Golden Key Center for Exceptional Children and KidsLink Neurobehavioral Center with the goal of identifying gender-specific markers. Questionnaires were completed by people with autism and close relatives of people with autism, looking at the diagnosing process, and seeing if a misdiagnosis occurred. The information from the data collected aims to improve diagnostic measures. This can positively impact access and quality of services available to all people with autism.

**Alexandra Nelson      Environmental Science      Dr. Christopher Marks**

"The Effect of Deep Hook Implantation in the Cichlid *Oreochromis tanganyicae*"

Recreational fishers often catch fish that have swallowed hooks. While hook retrieval is sometimes an option, it can result in injury or mortality. The Ohio Division of Wildlife recommends cutting the line and allowing swallowed hooks to "rust and fall out". While this may pose the safest option, there is also a lack of research about what occurs to the hook after the line is cut and it is left inside the fish. Hooks may theoretically be passed as fish continue to feed or they may remain in place and degrade. In this experiment, hooks were manually inserted into the esophagi of cichlids. After a three-week period, it was found that the hooks remained near the esophagus and showed no signs of degradation. Fish fed and behaved normally with no significant change in mass. These results indicate that line cutting may indeed pose a viable alternative to attempting hook removal.

**Masashi Nishiguchi      Mechanical Engineering and Mathematics      Dr. Shehla Arif**

"Inward migration of tea leaves in rotating fluid flow"

Rigid particles maintain circular motion by balancing the outward (centrifugal) force by an inward (centripetal) force. When a light rigid particle follows the motion of a rotating fluid, such as a tea leaf in a cup containing water that is rotated by a stirrer, it flows inwards towards the center of the cup. The forces on the tea leaf are determined by two different methods both producing the same result. The shape of the water-air interface is predicted by expressing the slope of the interface as a function of radius and rotational velocity. The larger the radius, the higher the interface as measured from the base of the cup. Euler equation is

then used to determine the pressure on the two faces of the tea leaf. The face closer to the center of the cup (smaller radius) faces lower pressure. The face farther from the center of the cup (larger radius) faces higher pressure. This pressure differential across the two faces of the tea leaf accompanies a force that is large enough to overcome the centrifugal force on the particle. Therefore, the tea leaf migrates inwards contradicting our intuitive understanding of the rotational motion of rigid particles.

**Lauren Oktavec          Exercise Science          Dr. Ronald Mendel**

"The Effects of Hydration Status on Athletic Performance"

The purpose of this study is to examine the effects of hydration status on running performance. It has been well established that exercise performance is accompanied by many adverse outcomes in the dehydrated state, however, hyperhydration is not as extensively researched. Twelve recreationally active individuals were tested to determine the effects of hydration status on a 30-minute run at a self-selected pace as well as reaction time measurements. Participants completed three separate trials in a euhydrated, dehydrated or hyperhydrated state. Hydration status was determined on each trial day via urine specific gravity. Upon determining hydration status, participants were either dehydrated, hyperhydrated or remained in their normal hydrated state. Each participant completed a 30-minute run for maximal distance and a reaction test. During this test, participants were asked to click the space bar when a visual or auditory stimulus was detected. Data collection is not complete at this time.

**Regina Saxon          Exercise Science          Dr. Ronald Mendel**

"THE EFFECTS OF COFFEE ON REACTION TIME IN DIVISION III COLLEGIATE SWIMMERS"

Twelve medically cleared and actively participating division three collegiate swimmers completed a single-blind study to determine the effects of coffee on reaction time over three days. On the initial day of testing, all twelve participants consumed neither coffee nor decaffeinated coffee. Participants were randomly assigned one of the two groups on the second day, and switched for the final day of testing. Reaction time off the blocks was recorded for each condition. Data were interpreted by both independent samples t-tests and by analysis of variance (One-Way ANOVA). The results showed no statistical significance between each group and range of reaction times, gender and range, nor specialty and range. Similar results were seen between each group and fastest recorded reaction time, gender and fastest recorded time, and with specialty and fastest recorded time. Additional studies that administer caffeine doses relative to body mass should be considered for future research.

**Kelly Simunich          Exercise Science          Dr. Ronald Mendel**

**Alyssa Braun          Exercise Science**

"Body Composition Methods: A Validation Study"

During the course of this research study, participants took part in a study which compared the Naked 3D fitness tracker to several other means of body composition measurement. They will

take part in each of the following; BMI (body mass index), BodPod, skinfold, BIA (bioelectric impedance analysis), and Naked 3D tracker in that order. Measurements were taken of the neck, shoulders, chest, upper arms, waist, stomach, hips, upper thighs, mid thighs, and calves to compare to those taken from the Naked 3D Fitness Tracker. This study is important for people looking to improve personal fitness, more specifically, wanting to track specific changes in their body composition. By validating the Naked 3D Fitness Tracker, it allows more of the general population to have access to the means necessary to assess body fat with an affordable and effective piece of equipment.

**Tia Swallow    Biology            Dr. Lin Wu**

"The effect of diet on the gut microbiota of the Madagascar cockroach"

The purpose of this experiment was to observe the effects different amounts of protein had on the diversity of the gut microbiota in *Gromphadorhina portentosa*, commonly known as the Madagascar hissing cockroach. To test this, four different diet treatments were established. These diets included mouse pellets, apples, canned tuna, and a starvation group. The treatment groups were fed their specified diet for one month before their gut was removed for testing. Four cockroaches were dissected before the diet treatments began to establish an initial microbial diversity. Colony isolation, gram-staining, and anaerobic testing were carried out in the initial and treatment groups. Results of the tests done on the initial samples indicated diverse bacterial species. The results of treated groups are still being processed but indicate an increase of bacterial diversity based on diet treatments.

**Shelby Vacha                    Psychology    Dr. Sarah Torok-Gerard**  
**Brinnley Belcher            Human Development and Family Science**  
**Alayna Kennedy            Psychology**  
**Megan Holland            Psychology**  
**Courtney Johnson        Psychology**

"Sleep Deprivation and Racial Prejudice "

The impact of sleep deprivation on an individual's blatant and subtle prejudice toward another person's race was examined in this research. Approximately 40 undergraduate students from the University of Mount Union were chosen at random. Surveys were given online to collect demographic information. The Pittsburgh Quality Sleep Index (PQSI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989) was used to collect sleep habit information from participants. Each participant was given the Subtle Prejudice Scale (Pettigrew & Meertens, 1995) immediately following the self-report demographic survey/PQSI and then the data was collected and scored. We are currently collecting data so do not yet have conclusive data. This is forthcoming and will be prepared by the date of SCHOLAR Day.

**Madeline Van Orman            Biology            Dr. Lin Wu**

"Assessing the Effects of Largemouth Bass Introduction on Bluegill Growth at the University of Mount Union's Nature Center's West Pond"

Bluegill is the most common fish that live at the Nature Center's west pond, which is located 6 miles from the University of Mount Union. During 2008, a study was conducted to determine if the growth condition for these fish was sufficient to allow for healthy growth and development. The study removed a total of 162 bluegill during this year and concluded that the growth condition for bluegill population in the Nature Center's pond was poor. Largemouth bass were added to the pond in an effort to produce the "top-down" effect, in which the results would be less bluegill due to predation from the largemouth bass, which would ultimately result in better growth conditions for the bluegill population. The purpose of this study was to determine that if after 11 years, with the removal of the bluegill as well as the introduction of largemouth bass, if the growth condition was still poor, or if the bluegill population had become one could be categorized as sufficient. Seventeen bluegills were captured by fishing poles and replaced, and their standard length and wet weight were recorded. Scales were then removed to determine the age of the fish. The Fulton Condition Factor, C, was calculated for each bluegill. Results showed that the average growth condition, C, is still poor for each of the seventeen fish calculated. The age and total length of each fish was also compared to the Ohio Department of Natural Resources recommended values and again, showed that the bluegill are still not growing as should be expected. It is a recommendation that in the future, more bluegill are removed from the Nature Center's west pond in order to create a healthy living environment for these fish.

**2:30 -3:15 PM - Poster Session II, Giese Center for the Performing Arts**

**Aubrey Buchweitz      Physician Assistant Studies      Prof. Vanessa Worley**  
"The Correlation Between Concussions and Suicidality "

According to a 2016 publication in the Canadian Medical Association Journal, the risk of suicide for individuals with a history of concussions is 3-4 times higher than the general population. Concussions are caused by many different mechanisms of action including but not limited to sports-related and military explosion traumatic brain injuries (TBI). The physiological and psychological change that occurs after concussions may be linked to the increased risk of death by suicide. The frequency and/or severity of concussions sustained in one's course of life may be associated with the increased risk of suicidality. This systematic review of literature will investigate the correlation between TBIs and the risk of death by suicide. If the relationship is strong, then medical providers and researchers will need to understand this risk and begin to explore what can be done to prevent fatal outcomes.

**William Clay      Chemistry      Dr. Robert Woodward**  
"Understanding Structure-Property Relationships of 3D Printable Polymers"

Three-dimensional (3D) printing allows for creation of patient-specific medical implants. Currently, the development rate of new materials does not match the growth of the

personalized implant market. Therefore, systematically understanding the relationship between the structure of a polymer with its 3D printability and post-print performance is necessary for future development of 3D printable polymers. Herein, four polymers were synthesized, each with a common backbone and varied side chain lengths of 2, 6, 10, and 15 carbons. To examine the 3D printability of the polymers, speed and print resolution tests were run. Furthermore, the deformation of the printed polymer structures over time was also studied. The 3D printability of these polymers was correlated to their physical properties such as the glass transition or melting point and molecular weight. Overall, the polymer with the side chain length of 15 carbons displayed the best 3D printing properties.

**Spencer Cline**                      **Neuroscience**                      **Dr. Tamara Daily**  
**Cassidy Hiles**                      **Psychology**  
**Spencer Clarke**                      **Psychology**

"Effect of Mindfulness Intervention on Public Speaking Anxiety in College Students"

Public Speaking Anxiety (PSA) or Glossophobia is a common problem in society especially in the college population. In this study, we will investigate the effectiveness of a mindfulness intervention for helping students cope with PSA as they give speeches in class. The participants will be male and female undergraduate students at the University of Mount Union ranging in age from 18 to 23 years old who identify themselves as experiencing PSA. This study will include an intervention experimental group and a no-treatment control group. The intervention will consist of diaphragmatic breathing and mindfulness meditation. We predict that the intervention will reduce self-reported psychological and physiological symptoms of PSA. If the results are as predicted then it would support the use of mindfulness interventions as a possible solution for college students who suffer from PSA.

**Tyler Cooper**                      **Mechanical Engineering**                      **Dr. Joshua Gargac**

"Mechanical System Analysis using Computer Aided Engineering (CAE)"

Kinematics and Dynamics of Machinery is an important topic related to the field of Mechanical Engineering. Engineering problems are often solved using mechanisms in motion. Designing and analyzing such devices can be costly, timely, and difficult which is why Computer Aided Engineering (CAE) tools are frequently used. Particularly, this individual research project utilizes "Working Model 2D," an engineering tool used to visualize motion and other dynamic behavior, to generate a superior way to wipe vehicle windshields. By applying kinematic and dynamic mathematics in conjunction with Working Model 2D, a new concept windshield wiper system was developed. This discovery proves to be useful as it has the potential to sweep the entire surface of a windshield with only one driving motor enhancing driver visibility. This 2-D simulation demonstrates the mechanisms efficiency in a user interactive and analytical way at a much lower cost.

**Hanna Davis**                      **Biology**                      **Dr. Christopher Marks**  
**Marcus Morrison**                      **Biology**

"BIO 405 Epigenetics"



Epigenetics is a growing field in biology that studies the inheritance of genetic expression patterns. This study investigated the epigenetics of chill coma tolerance in *Drosophila melanogaster*. We exposed female flies to 16 hours of non-lethal chill coma and measure chill coma survival and recovery time in the offspring. We found that flies descended from cold-exposed females recovered sooner from chill coma and could withstand longer bouts of chill coma. These findings suggest that *Drosophila* may provide a promising model to add to the growing field of epigenetics.

**Meghan Dier**                      **Physician Assistant Studies**                      **Prof. Vanessa Worley**  
"Screening for Sex Trafficking in the Emergency Department "

Would you be able to recognize a sex trafficking victim if they were standing right in front of you? According to the International Labor Organization, it is estimated that 4.8 million people globally are victims of sex trafficking. Sadly, many of these victims go unnoticed, especially in healthcare settings. This is a problem, as many overlooked victims seek care in places like emergency departments. My research question asks whether all emergency healthcare settings should implement routine sex trafficking victim screenings. A systematic review of literature was performed to investigate the effectiveness of such a screening tool and to help facilitate the implementation of routine screening primarily through an array of key questions. The evidence suggests that sex trafficking victim screening tools will be effective in identifying and rescuing these individuals when they present for emergent medical care. Unfortunately, we all need to know the signs.

**Jennifer Gotschall**                      **Biochemistry**                      **Dr. Keith Miller**  
"Bacterial Stimulation of RAW Mouse Macrophages Heightens TNF-Production to Elicit an Immune Response"

Understanding the basic functions of the immune system are imperative for developing new and effective vaccines. One specific immune cell, the macrophage, functions to engulf foreign invaders and release chemical messengers, called cytokines to recruit more immune cells to the site of infection. The purpose of this study was to determine what portion of *Escherichia coli* bacteria stimulates the greatest TNF-cytokine released by macrophage cells, thus eliciting an immune response. It was hypothesized that through the breakdown (lysis) and separation of *E. coli* into three layers, specific cellular protein components will better stimulate the immune system. Through techniques such as a sucrose gradient and Bradford assays, the protein concentration in the *E. coli* lysate was assessed. From there, the lysate was diluted and incubated for 24 hours with macrophages. An enzyme-linked immunosorbent assay (ELISA) was utilized to determine TNF-cytokine concentration. Further results will be presented on Scholar Day.

**Emily Henson**                      **Athletic Training**                      **Dr. Sonia Wehrlin**  
"Femoral neck fractures"

The femoral neck is the part of the femur, the thigh bone, that is under the most stress. Due to the femur being the biggest weight bearing bone in the body, if it is injured it can cause extremely detrimental effects to the patient. Through data research, ways to prevent and identify risk factors have been documented. A small portion of an Athletic Trainers scope of practice is injury prevention, treatment and rehabilitation. This research will help Athletic Trainers and other health care professionals treat any patient population they may work with.

**Amrita Jagpal**

**Physician Assistant Studies**

**Prof. Vanessa Worley**

"Intermittent Energy Restriction: Is Fasting a More Effective Way for Adults to Lose Weight Than Conventional Dieting?"

Have you ever wondered what the most effective diet to follow for weight loss is? With obesity on the rise many new diets have surfaced, however, the effectiveness, safety and long-term impact of many of these diets has yet to be determined. Considering the gaining popularity of intermittent fasting, few studies have sought to answer the question if intermittent energy restriction (IER) is more effective than more conventional diets involving continuous daily energy restriction (reduced calorie diet) in terms of weight loss. A systematic review of literature was conducted assessing articles from MEDLINE, PubMed and CINAHL, including systemic reviews and clinical trials comparing the two diets. Findings suggest that both diets had similar results regarding weight loss. Also, IER may have some additional benefits, but more rigorous and substantial studies are needed. This research will help adults who are seeking to lose weight through dietary modification.

**Daijahnae Jones**

**Exercise Science**

**Dr. Ronald Mendel**

"Influence of Follicular and Luteal Phases of the Menstrual Cycle on Muscular Endurance Performance"

In recent years, female subjects have become more relevant in research allowing the female population access to more realistic comparative data. Due to the constant hormone changes females encounter throughout each month, characteristics such as mood and physical performance can be affected. Marieb et al. (2016) examined higher levels of estrogen and progesterone hormones during the luteal phase of the menstrual cycle, compared to follicular. Pallavi et al. (2017) and Santos Andrade et al. (2017) examined muscular strength between the follicular and luteal phases of the menstrual cycle and concluded that muscular strength performance was lowest during the follicular phase. Julian et al. (2017) investigated the endurance capacity between the follicular and luteal phases of the menstrual cycle and concluded that endurance capacity was lowest during the luteal phase. Purpose: The purpose of this research was to assess muscular endurance performance during the follicular and luteal phases of a single menstrual cycle. Methods: Six participants ages 18-24 years old met a total of two times; once on day 1 of menses (follicular phase) and day 21 (luteal phase). Muscular endurance performance was assessed using sit-ups in one minute and push-ups until exhaustion. Results: Data collection was incomplete at the time of abstract submission. Discussion: Data analysis will occur upon completion of the study.

**Nicole Lanese**      **Psychology**      **Dr. Sarah Torok-Gerard**  
**Claudia Boryka**      **Psychology and Criminal Justice**  
**Megan Ronceray**      **Psychology and Criminal Justice**

"The Effect of Superstitious Behaviors, Importance of game and Internal Locus of Control on Athlete's Perception of Game Play"

A link has been shown specifically between internal locus of control and outcomes relating to satisfaction, commitment and task performance (Galvin, Randel, Collins, & Johnson, 2018). The idea that superstitious behaviors practiced in sports, the importance of a game and an athlete's internal locus of control directly affect an athlete's perception of how they play will be studied. Sixty collegiate athletes attending a small, private university in northeast Ohio will complete a four-part survey focusing on whether participants use a superstitious behavior before athletic games, their internal locus of control, the perceived importance of the game they are playing and their perception of their game play. Each participant will rate his or her response using a different 5-point scale for each measure (for example, 1 being "strongly disagree" and 5 being "strongly agree"). It is predicted that an athlete's self-perception of how they perform in a game will be directly affected by the presence of a superstition and their internal locus of control, and how important they perceive their game to be. It is also predicted that presence of a superstition and internal locus of control will have correlational effects. Finally, it is predicted that the use of a superstitious behavior will have an impact on an athletes' perception of play. Linear regression will be used to assess the relationship between the variables. There are some limitations to this study like the small sample size of the campus, but for the purpose of this study this shouldn't affect the data collected.

**Lisa Lautzenheiser**      **Art**      **Dr. Margo Miller**  
"Book Jackets Re-Designed"

For my SCE portfolio, I am creating and redesigning book covers. I chose to design book covers because of my love of books and reading. It's also a great way that I can combine graphic design with traditional mediums. I am focusing mostly on redesigning classic novels, while also adding in some current novels and creating a few titles based off some of my existing illustrations. To create these covers, I am focusing mostly on traditional art forms to create illustrations that make up the cover art. Using my original illustrations, I will combine them with graphic design tools to create these covers. I want to show viewers my passion through these covers and invite them into the world of books. I strive to showcase the impactful world of these novels through my illustrations and designs and leave an impact on the viewer.

**Abigail Matsushima**      **Exercise Science**      **Dr. Ronald Mendel**  
**Connor Troyer**      **Exercise Science**

"The Cognitive Effects of Caffeine During Different Phases of the Female Menstrual Cycle"

Caffeine is a known stimulant that increases alertness and performance and is metabolized by the enzyme CYP1A2. It is also known that estrogen is also metabolized by the same enzyme which is relevant due to the fluctuation of estrogen during the menstrual cycle. Estrogen levels

are the lowest during day 1-5 of the cycle and increase to peak at day 14. Subjects included 18-25 year-old females with consistent menstrual cycles for at least 6 months and been on or off birth control for at least 3 months. Subjects consumed either caffeinated or decaffeinated coffee followed by testing memory, alertness, fatigue, energy levels, and focusness on day 3 and 11 of their menstrual cycle. The other form of coffee was completed the following cycle on day 3 and 11. Data collection not completed at time of submission.

**Christal Schumacher** Exercise Science      **Dr. Lonnie Lowery**  
**Brett Bell** Exercise Science  
**Matt Harris** Exercise Science  
**Stephen Durst** Exercise Science  
**Emma Thombs** Exercise Science

"Quantifying Similarities and Differences Between Wearable Fitness Trackers in University Students."

Wearable fitness trackers (accelerometers) have been increasingly popular among university students. Little is known, however, about these accelerometers' accuracy in tracking daily movement. Students at the University of Mount Union were recruited to test the accuracy using two accelerometers (Fitbit HR and Omron HJ-321) located on different sites of their body to track their movement over a four-day period. The participants recorded their results on a data sheet and met with data collectors three times throughout the four-day period. The results displayed the Fitbit HR overestimating the amount of steps taken per day. This information is important for the field of Exercise Science due to the amount of programs turning to accelerometers similar to the Fitbit HR and Omron HJ-321 for conducting research. This research will also provide information concerning the cost effectiveness of the accelerometers to the general public.

**Brynn Skilliter** Physician Assistant Studies      **Prof. Vanessa Worley**

"Anxiety is Ruff: A Systematic Review on the Use of Therapy Dogs in Pediatric Outpatient Settings"

Imagine that you are six years old again... you are at your pediatrician's office, and the nurse tells you that you need a shot. Did that bring back some scary memories? You aren't alone. Many children can find healthcare settings intimidating, frightening, and painful. Animal-assisted interventions have been shown to decrease anxiety and improve medical outcomes in a variety of medical settings. This systematic review of literature will assess if animal-assisted intervention with therapy dogs will decrease anxiety, distress, and pain experienced by children in pediatric outpatient settings. The article will also address the barriers that may be encountered when implementing an animal-assisted intervention into practice. The final product of this review will be a practice guideline for pediatric care providers for incorporating animal-assisted therapy into pediatric outpatient settings.

**Brianna Slemons** Athletic Training      **Dr. Sonia Wehrlin**

"Mental Aspects of Injuries in Athletics"

Out of seven injured football safeties, five were re-injured two days after returning to play. One of the most common conditions in athletics is not necessarily physical in nature, but rather mental. People who watch any sporting event do not get to see what athletes endure on a daily basis. Many of these injured athletes suffer from more than just the actual physical injury. In fact, most of them will undergo a bout of depression and can even develop anxiety when returning to their prospective sport. Mental illness in athletics can cause more cases of re-injury if the athlete is returned to play too soon. To start researching this topic, google scholar was used to find articles about mental illness in athletics. An article titled, Emotional Responses of Athletes to Injuries, found on Google Scholar, back up that mental illnesses are more prevalent in athletics than people realize.

**Hannah Stryker      Physician Assistant Studies   Prof. Vanessa Worley**  
"Needle Exchange Programs: Dangerous Enabling or Important Prevention?"

According to the World Health Organization, approximately 13 million people across the globe use illicit intravenous drugs, and 2.2 million are co-infected with HIV and hepatitis C. The common practices of sharing and reusing needles/syringes spread these potentially fatal infections, however, dangerous practices like this are typically unnecessary. Needle exchange programs allow people who inject drugs (PWIDs) to gain access to clean paraphernalia. Many individuals are unaware of such programs, and how they can be utilized. A systematic review of literature was conducted to examine these programs, and what role health care providers should play in referring PWIDs to such programs. Do referrals benefit patients by preventing the further spread of HIV and hepatitis C, or do they enable patients to continue their drug use by providing them with clean supplies? Research suggests that a harm reduction approach may be more beneficial, but the controversy must still be addressed.