

**Missouri
State**

McQUEARY COLLEGE of
HEALTH AND HUMAN SERVICES

STUDENT RESEARCH *Symposium*

April 24th, 2025
9:30 A.M. - 11:00 A.M.
PSU Ballroom

McQueary College of Health and Human Services

Student Research Symposium

Welcome to the 29th Annual McQueary College of Health and Human Services Student Research Symposium!

This year's symposium celebrates the innovative research of our students and provides a platform for them to share and discuss their scholarly work. We are excited to continue this cherished tradition and look forward to recognizing the outstanding accomplishments of MCHHS students. We also honor the faculty members who guide and mentor these students, and we thank the schools and departments that support the spirit of inquiry and discovery.

A special thank you to all McQueary College of Health and Human Services faculty, staff, alumni, board members, and students for your participation in this year's symposium. Your dedication, hard work, and involvement make this event a success.

Finally, I would like to express our gratitude to the MCHHS Student Research Symposium Committee for their commitment and effort in organizing this event. Your contributions are greatly appreciated.

Dr. Mark A. Smith

Dean, McQueary College of Health and Human Services

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1. Personality, Institutional Commitment, and Students' Intentions to Leave College

Carlos Abrams, Eryn Fanning, Michael Houston, Thomas Kane

Faculty Supervisor: Thomas Kane
Psychology

Models of student retention have identified several key factors influencing college dropout rates (Aljohani, 2016). Students may withdraw involuntarily due to unmet academic standards or leave voluntarily despite meeting academic requirements—often driven by dissatisfaction with academic or extracurricular experiences. Retention models consistently emphasize academic integration, social integration, career commitment, and institutional commitment as predictors of voluntary withdrawal (Aljohani, 2016; Tinto, 1993). However, the role of personality in this process remains underexplored. This study examined the direct and indirect effects of Big Five personality traits on students' intentions to voluntarily withdraw from college. Academic integration, social integration, affective commitment to the university (MSU), and affective career commitment were tested as mediators. Participants were 356 students at MSU, the majority of whom were freshmen. Key measures included Big Five personality traits, affective commitment to MSU, academic and social integration, affective career commitment, and dropout intentions.

2. From Stiff to Swift: The Effect of Proprioceptive Neuromuscular Facilitation vs. Active Release Technique on Shoulder Impingements on Shoulder Dysfunction

Jacob Ackerson

Faculty Supervisor: W. David Carr

Athletic Training

Subacromial impingement (SAI) occurs when the tendons and bursa in the shoulder become pinched between the scapula and the humerus. SAI is diagnosed using a thorough medical history review as well as diagnostic x-ray and ultrasound techniques to rule out other conditions. There is no standard treatment for SAI. The purpose of this critical appraisal is to evaluate the effectiveness of proprioceptive neuromuscular facilitation (PNF) versus active release technique (ART) on pain management and shoulder function in patients with SAI. The journal articles chosen were found through PubMed and used inclusion/ exclusion criteria while using various range of motion measurements to measure the success of the intervention. The PEDro scale was used to evaluate each intervention article; to which articles scored a 6 or 7 out of 10. Both PNF and ART showed significant improvement in patients with shoulder dysfunction and pain ratings.

3. The Impact of Coach and Teammate Relationships on Leadership in Black Female Athletes

Jordan Allen, Kathryn Plautz, Ashleen Girm, Maia Cheong, and Dr. Ashley Houston

Faculty Supervisor: Ashley Houston
Psychology

Black female athletes navigate a complex racial terrain with their coaches and teammates that would limit their ability to take on leadership roles, but research indicates these relationships may also be a source of support for these athletes (Allison, 2020; Ofoegbu, 2023; Outlaw & Toriello, 2014). This study is focused on the impact of relationships on Black female athletes' pursuit of leadership roles with these questions:

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How do coaching relationships impact these athletes' desire to take on athletic leadership roles? How do teammate relationships impact Black female athletes' desire to take on athletic leadership roles? How do these relationships interact to impact athletic leadership for Black female athletes? Participants for this study include one Black female college athlete from NCAA Division I public university who participated in a one-hour focus group session for a larger study. This study found that coaching relationships guide leadership growth within the security of athletics, and a team with a sense of cultural safety and academic support networks fosters leadership. This indicates that promoting cultural awareness, academic support networks, and responsive coaching can enrich Black female athletes' leadership growth.

4. Obesity & Type 2 Diabetes

Skylar Andreasen, Arwa Abdelhakiem, Rebecca Bach, Linnea Brown, Mayeen Choudhury, Amy Hulme

Faculty Supervisor: Amy Hulme
Biomedical Sciences/Clinical Lab Sciences

Type II diabetes is a disease characterized by insulin resistance, leading to hyperglycemia and other complications. The prevalence of diabetes has risen sharply, with the number of diagnosed individuals increasing from 200 million in 1990 to 830 million in 2022, disproportionately affecting low-income populations. A key contributor to this trend is obesity, which is closely linked to poor nutrition and food insecurity. Globally, 2.5 billion adults are overweight, with 890 million classified as obese. Obesity, defined as having a body mass index of 30 or greater, has doubled among adults and quadrupled among adolescents since 1990. Limited access to nutritious foods, particularly in food deserts, forces individuals to rely on

processed, high-calorie options, increasing the risk of obesity and type 2 diabetes. Similarly, access to essential medications for type II diabetes, particularly insulin, remains a significant challenge. Additionally, lifestyle factors such as smoking, chronic stress, and insufficient sleep are strongly correlated with an increased risk of type II diabetes. Managing these factors, alongside improving access to nutritious food and medication, is essential for preventing and managing type II diabetes.

5. The Anterior Apprehension Test and How It Can Be Used to Determine Future Shoulder Dislocations

Rebekah Anoa'i

Faculty Supervisor: Allan Liggett
Athletic Training

The purpose of this study is to evaluate the effectiveness of the anterior apprehension test as a predictor for future dislocations in individuals who have experienced a traumatic anterior shoulder dislocation. Given the high incidence of redislocations following an initial dislocation, this research is critical in identifying patients at high risk for recurrence, potentially guiding decisions for early surgical intervention and determining management strategies. The studies include a subject pool of 207 active male and female participants who have experienced an anterior shoulder dislocation or surgical intervention. The target population is active individuals who have had a prior traumatic shoulder dislocation. Data for this research was collected from 3 peer-reviewed articles sourced from PubMed, utilizing a 10-year filter for relevant publications. Methods involved taking the participants through a series of diagnostic testing, specifically the Anterior Apprehension test, to assess their overall shoulder stability. The results of these studies showed that the

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anterior apprehension test is not a solely definitive predictor of future shoulder dislocations but is a strong indicator of overall shoulder instability.

6. Evaluating the Effect of Maitland Joint Mobilizations on Ankle Stability and Range of Motion in Individuals with Chronic Ankle Instability: A Critically Appraised Topic

Alicia Batten, Dr. Michael Hudson, PhD, LAT, ATC

Faculty Supervisor: Michael Hudson
Athletic Training

Ankle sprains are one of the most common musculoskeletal disorders, accounting for a large percentage of sports injuries. A large population of patients with ankle sprains report recurrent instability, additional ankle sprains, and reduced functional capacity, which leads to chronic ankle instability (CAI). This critically appraised topic evaluates the interventional effect of Maitland joint mobilizations on ankle stability, range of motion, and dynamic postural control. A systematic review of peer-reviewed studies published between 2020 and 2024 identified relevant research that reported statistically significant effects of this intervention. Articles chosen were appraised using the PEDro scale to assess the quality and risk of bias and CEBM levels of evidence to verify reliability. Maitland mobilizations were shown to demonstrate significant improvements in ankle range of motion and balance, movement function, and dynamic postural control. Clinicians should recognize intervention limitations and consider combined therapy approaches for optimal long-term effects.

7. From Classrooms to Campus Life: The Influence of Weight Stigma on University Students

Seth Breesawitz, Daniela Novotny, DHSc, RDN, LD, CHES, Hillary L. Roberts, EdD, RDN, LD, Morgan Hoover, BS

Faculty Supervisor: Daniela Novotny
Dietetics and Nutrition

Weight stigma is a pervasive issue with consequences for mental and physical health. However, its specific impact on the college experience remains underexplored. This qualitative study examined how anticipated weight stigma (AWS) and experienced weight stigma (EWS) influenced students' academic and extracurricular choices, as well as their psychosocial well-being and university experience. Two Zoom focus groups (n=5, n=7) were conducted. Discussions were transcribed using Zoom, then reviewed and corrected by the research team, with final transcripts undergoing thematic analysis. AWS and EWS shaped participants' decisions regarding major selection, campus involvement, and professional engagement. Participants experienced stigma through the built environment on campus, and stigma also contributed to avoidance behaviors such as not attending campus events or professional development opportunities. To promote weight inclusivity, participants recommended implementing campus-wide supports and resources addressing weight stigma. Continued research is needed to further examine effects of stigma and develop strategies to foster weight inclusive campus environments.

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8. Athletic Environment and the Collegiate Athlete Experience for LGBTQ+ Women

Maia Cheong, Jordan Allen, Sophia Dela Coleta, Ashleen Girm, Kathryn Plautz

Faculty Supervisor: Ashley Houston
Psychology

Collegiate athletics is dominated by cisgender male athletes and heteronormativity (Brody et al., 2021), but there is limited understanding about the experiences of woman-identifying LGBTQ+ college athletes. While current research exists on woman-identifying athletes and LGBTQ+ athletes separately, the presence of LGBTQ+ women in NCAA athletics demands intersectional research about their experiences (Anderson et al., 2023). Using qualitative methods, this study examines how intersectional identities shape team dynamics and personal athletic experiences with NCAA Division I athletes from a mid-sized Midwestern university. We seek to explore: (1) How does the intersectional identity of woman-identifying LGBTQ+ collegiate athletes influence teammate relationships, team cohesion, and group identification (2) How does the climate within the athletic department influence these athletes' feelings of self-efficacy and motivation within the roles of their sport?

9. Being Alone: How Personality and Media Usage Play a Role in Stress Response

Taylor Coakley, Emily Green, Chance Barber, Allie German

Faculty Supervisor: Amber Abernathy
Psychology

According to Roberts and colleagues (2014), high conscientiousness has many benefits, not only in personal behavior and morality, but also

in physical health and longevity. Multiple studies have been conducted finding that higher conscientiousness is also related to lower internet usage (Tian et al., 2021; Perugini & Solano, 2021), though Perugini and Solano (2021) suggest people who are high in conscientiousness may use media to accomplish their goals. Conscientiousness can also, however, have some negative effects. It was found that higher conscientiousness led to more brooding thoughts rather than reflection when relating to depressive symptoms (Lyon et al. 2021). More studies on personality and thought have found that the experience of mind-wandering is influenced by personality traits, including neuroticism and openness. People high in neuroticism may have more negative mind-wandering experiences, while those high in openness may experience more creative or positive thoughts (Jan, 2023). Scores on personality measures, media usage measures, and types of thought questionnaires will be examined to see if there is any relation between these variables and whether that changes when left alone for 15 minutes.

10. Diagnose Me Maybe? The Relationship Between Parenting Styles and Personality Traits on Willingness to Pursue Self-Diagnosis or Clinician Diagnosis

Taylor Coakley, Brayden Vickers, Lily Woolsey, Haylee Ferdig

Faculty Supervisor: Amber Abernathy
Psychology

Mental health is now widely discussed on social media, so information surrounding it is much easier to obtain and understand. This change may support individuals who have mental health illnesses more effectively than in the past; however, it may also result in individuals self-diagnosing and/or individuals requesting

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clinicians to diagnose them based on information they obtained from the internet. The current study sought to better understand potential underlying variables that may cause individuals to self-diagnose themselves or to seek out official diagnoses. Participants completed four questionnaires: a demographic questionnaire, the IPIP-50, a parenting questionnaire, and they were asked about their diagnoses. Due to the ethical problems and deficient use of resources associated with self-diagnosing, the push to educate individuals on mental health correctly is important to avoid potential issues associated with the incorrect diagnosis. Discovering the variables that may support an individual to pursue self-diagnoses over official diagnoses may allow researchers and clinicians to understand how to approach those individuals that turn towards self-diagnoses first.

11. Timbre Recognition in Musicians and Nonmusicians

Jayden Coalson

Faculty Supervisor: Melissa Fallone
Psychology

The purpose of this study is to analyze the components of timbre and confidence-accuracy judgments in instrumental identification. The current study is a replication with extension of a study by Cassidy and Schlegel (2016) on instrument identification and the initial attack component of timbre. To serve as an extension to the study, participants also rated their confidence, and the ratings will help determine their confidence and accuracy relationship. Current data supports prior findings by Cassidy and Schlegel (2016). Musicians were overall more accurate in instrument identification, while both musicians and nonmusicians were significantly less accurate when the initial attack

of the instrument was removed. Confidence measures show a positive correlation between confidence and accuracy, with musicians being significantly more accurate than nonmusicians. This study does not only solidify knowledge on timbre recognition but also creates a bridge between metacognitive judgments and music cognition. Music educators will be able to use these findings to help more efficiently teach their students, and it will aid in the understanding of metacognitive judgments in both musicians and nonmusicians.

12. Use of Eccentric Muscle Contraction of the Rotator Cuff to Increase Muscle Activity-Pilot Study

Matthew Dampf, Jakob Happel, Wyatt Titus

Faculty Supervisor: Sean Newton
Physical Therapy

Shoulder pain is a common musculoskeletal condition, and rehabilitation protocols typically involve strengthening the rotator cuff muscles using concentric exercises. Eccentric exercises have been suggested to improve shoulder strength with lower energy expenditure, but their effectiveness remains controversial. Therefore, we sought to determine whether eccentric exercises influence muscle activation patterns during contraction of the lateral shoulder rotators (infraspinatus), as measured by surface electromyography (sEMG).

We investigated this in 10 healthy subjects with no history of shoulder pathology. Data collection included isometric muscle strength, measured using a hand-held dynamometer, and sEMG activity during both isometric and eccentric contractions. Assessments were conducted at baseline and after six weeks of exercise. Participants completed exercise sessions three times per week, performing three sets of 10 repetitions of controlled eccentric contractions

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of the external shoulder rotators using TheraBands over six weeks.

This study employed a pre-test/post-test design, comparing muscle activity as measured by sEMG relative to maximal voluntary isometric contraction. Post hoc analysis revealed a significant increase in lateral rotation muscle strength, as measured by the hand-held dynamometer, for the middle trapezius ($p = .004$). However, all other results were not statistically significant.

13. Adverse Childhood Experiences in Relationship to Stress and Resiliency Levels Among Prelicensure Nursing Students

Kerri Davis

Faculty Supervisor: Debbie Horine
Nursing

Adverse childhood experiences can negatively impact life opportunities such as education and employment, and are also associated with physical, social, and emotional consequences. The stressful academic and clinical requirements that prelicensure nursing students experience necessitate resilience that may be lacking in those who have childhood trauma backgrounds. The purpose of the study was to examine the relationship between adverse childhood experiences, acute stress, and resiliency levels in prelicensure nursing students, as well as compare obtained adverse childhood experience scores to the national average of the general public. All cohorts of the undergraduate nursing program were invited to complete a survey with validated instruments measuring adverse childhood experiences, acute stress, and levels of resilience. Based on the results, encouragement of self-care measures and increased resiliency prior to joining the nursing workforce has the potential to positively impact student nurse well-being. Results of this study

will also guide future research on the topic of lateral violence in the nursing profession.

14. Social Inequities of Climate Change in Arizona

Samuel Durham, CHES, CPH-prov., Ayesha Shaik, Thoyaja Keerthipati, Teja Guttikonda, Dr. Molly Lancaster MCHES PhD

Faculty Supervisor: Molly Lancaster
Public Health/Health Promotion and Wellness
Management

Arizona, with the highest heat-related mortality rates in the U.S., faces disproportionate environmental heat hazards. Research has yet to fully explore the influence of social vulnerability (SV) on heat stress illness rates (HSI). County-level data from 2010-2022 was analyzed to examine the relationships between SV and HSI and to assess differences in HSI across SV theme levels, hypothesizing significant positive correlations and differences. HSI, SV, and seasonal average temperatures (SAT) were retrieved from publicly available databases. Bivariate correlation analysis examined the relationship between SV and HSI, while one-way ANOVAs with Tukey HSD tested differences in HSI across SV theme levels. Arizona counties ranked by SAT aligned with SVI county rankings. No significant correlation was found between SV and HSI. Significant differences were observed across SV theme levels, with patterns inconsistent with previous research. Vulnerable populations often have fewer resources to adapt, making them more susceptible to heat-related risks. Variations across SV themes and elevated SAT in vulnerable populations highlight the need for targeted interventions.

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15. Autism Spectrum Disorder Traits and Sensory Sensitivities in the College Classroom

Jayden Echols, Gracelin Nelson, Monique Arroyo, Carly Yadon

Faculty Supervisor: Carly Yadon
Psychology

This study examined the relationship between Autism Spectrum Disorder (ASD) traits and sensory sensitivities in college classrooms and study spaces. Building on previous findings, researchers surveyed 219 participants using multiple questionnaires, including the Autism Quotient (AQ), Broad Autism Phenotype Questionnaire (BAPQ), and various sensory assessments. Results showed weak to moderate positive correlations between ASD traits and difficulties with sensory stimuli such as fluorescent lighting, strong smells, background noise, temperature, and seating discomfort. These findings suggest that individuals with more ASD traits are more likely to experience sensory challenges that negatively impact learning. The study highlights the importance of considering sensory accommodations in educational settings to support students with higher sensory sensitivities.

16. Evaluating the Impact of Geriatric Simulation on Empathy Toward Aging Individuals

Chelsea Ezugwu, Grace Landewee, Makayla Nelson

Faculty Supervisor: Marcia Himes
Physical Therapy

Background: A geriatric simulation experience provides hands-on learning for future healthcare professionals to understand challenges older adults face. Traditional coursework has a limited

impact on improving students' desire to work with older adults. Purpose: This study evaluated changes in student attitudes and empathy toward older adults before and after a geriatric simulation, using the UCLA Geriatrics Attitude Scale (UCLA-GAS). Methods: 126 first-year physical therapy students (mean age = 22.5 ± 1.5 ; 54 males, 72 females) completed the UCLA-GAS before and after a geriatric simulation. The simulation involved wearing specialized suits to replicate age-related impairments and completing tasks such as dressing, eating, and managing medications. Results: A paired samples t-test showed a significant increase in empathy scores from pre-test ($M = 51.80$, $SD = 5.51$) to post-test ($M = 54.02$, $SD = 5.80$), $t(125) = -5.76$, $p < .001$, and a moderate effect size ($d = -0.51$). Conclusion: The geriatric simulation significantly improved student empathy toward older adults, suggesting that hands-on experiences may enhance attitudes and improve interactions in clinical settings.

17. The Strain of Healthcare-Associated Infections on Global Healthcare

Henry Filipek, Emma Lister, Dani Lynch, Dustin Sterling, Colette Witkowski

Faculty Supervisor: Colette Witkowski
Biomedical Sciences

Hospital acquired infections (HAIs) are a global health concern resulting in longer hospital stays, increased medical costs, and increased risk of mortality. Most HAIs are from drug resistant diseases, including Methicillin-Resistant Staphylococcus aureus (MRSA) and C. difficile. Antimicrobial resistance makes combating HAIs difficult, costly, and burdensome. The availability of personal protective equipment (PPE) and sterilization techniques also influence the ability of medical professionals to prevent transmission. Lower income countries can be at

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an increased risk of more HAIs due to inadequate PPE and a higher prevalence of antimicrobial resistant infections. Common prevention strategies include infection control protocols and policies within procedures/surgeries, prescription of antibiotics, hospital operational practices, and education. These strategies are easier to implement with more resources and funding. New technologies are being developed and implemented into hospital systems, including UV sterilization and use of AI to better monitor patient care. Continued research, investment in healthcare infrastructure, and innovative technologies are essential to reducing HAIs and improved patient outcomes globally.

18. The Effect of Hypochlorous Acid on Cultured Osteoblasts and Escherichia coli

Cristina Flaquer Fusté, Mayeen Choudhury, Josh Smith

Faculty Supervisor: Joshua Smith
Biomedical Sciences

Hypochlorous acid, a naturally occurring compound in neutrophils, has been used as an antimicrobial in wound treatment. Osteoblasts, bone-forming cells, within the bone tissue play a large role in bone fracture healing. HOCl is being considered as a surgical antiseptic to decrease infections in orthopedic surgical procedures. This study therefore seeks to determine the effects of HOCl on osteoblasts and E. coli. Cultured osteoblasts were incubated with varying concentrations of HOCl to examine osteoblast survivability. It was determined that osteoblast survivability is not affected at 10 ppm and was 51% at 50 ppm HOCl. The most common pathogens associated with osteomyelitis following compound fracture are Escherichia coli, Pseudomonas aeruginosa, and Staphylococcus aureus. To examine

antimicrobial effects of HOCl, this work looked at the ability of 5 and 50 ppm HOCl to inhibit growth of E. coli. Bacterial cultures were exposed to HOCl for 5 or 15 minutes, plated on NA and EMB agar, incubated 24-48 hours, and then colony forming units were used to determine percent kill. E. coli was killed to over 99% with 50 ppm HOCl, while ddH₂O showed a better ability to kill E. coli than HEPES solution in the 5 ppm HOCl concentration.

19. The Role of Therapeutic Ultrasound in Healing Tibial Stress Fractures

Kate Forward, W. David Carr

Faculty Supervisor: W. David Carr
Athletic Training

Context: Tibial stress fractures are common injuries in active people. This critically appraised topic will determine if therapeutic ultrasound aids in healing tibial stress fractures in physically active individuals. Methods: This search utilized EBSCOhost and PubMed databases. Keywords were 'ultrasound', 'stress fractures', 'healing', and 'active'. 'Free full text', and 'last 20 years' were the search limits. 'Tibial stress fractures' and 'active individuals' were used as inclusion criteria, which yielded 52 articles. Three articles Uchiyama (2007), Rue (2004), and Yadav (2011), were selected. In each study the time it took the patients to return to activity was compared to the placebo group. The studies used basic descriptive and t-test and chi-square to analyze the data. Each study was given a PEDro score of 4/10, 3/10, 7/10, respectively. Results: Uchiyama did not perform any statistical analysis, whereas Rue did not include the description. Yadav provided the outcomes of their statistical analysis. Uchiyama and Rue reported an insignificant p-value. Yadav reported a significant p-value. Conclusion: Based on the results the use of therapeutic ultrasound to aid in

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stress fractures is not viable when compared to placebo.

20. Surveillance of Rad23 Post-Translational Modification by Ubiquitin Following UV Treatment On Tetrahymena Thermophila

Ethan Foster, Joshua Smith

Faculty Supervisor: Joshua Smith
Biomedical Sciences

Rad23 is a key protein involved in both nucleotide excision repair (NER) and the ubiquitin-proteasome system (UPS) in eukaryotic model organisms such as *Tetrahymena thermophila*. This protein is clinically relevant since a homolog of Rad23 exists in humans known as hHR23A and hHR23B. The similarities in structure and function of this protein allow direct comparison to humans without use of invasive procedures. Rad23 binds Rad4/XPC in the NER pathway which is crucial for detecting DNA damage and recruiting repair proteins. Separately, Rad23 also functions as a shuttle protein in UBS and cannot carry out both functions simultaneously. The goal of this study is to determine if post-translational modifications to Rad23 caused by UV-radiation change its function which could affect DNA repair and cancer development. This study will use the DDI1 protein as a control which functions in UPS but not NER. The results of this study were acquired through SDS-PAGE and Western Blot Analysis. Analysis of the Rad23 protein showed modification with ubiquitin that was not present on DDI1. Continued research on how the modification on Rad23 promotes or inhibits Rad23 function in NER can further assist sensitizing cancer cells to chemotherapeutics.

21. Determining the Role of SPTBN1 in HIV-1 Uncoating in Human Microglial Cells

Callie Fry, Marc Havlicek, Amy Hulme

Faculty Supervisor: Amy Hulme
Biomedical Sciences

HIV-1 is the virus that causes acquired immunodeficiency syndrome (AIDS), and currently, there is no cure once an individual is infected. The development of new drugs targeting HIV-1 replication steps is essential for keeping viral levels at a minimum and to prevent further transmission. An attractive replication step for new drug targets is viral capsid uncoating, where the virus loses the protein structure encapsulating the genome. The exact mechanism of capsid uncoating is unknown; however, several host-factors may be involved including SPTBN1. Recent studies have shown a significant decrease in viral infectivity when this protein is knocked down, yet its role in replication has not been characterized. The plus/minus cyclosporine A assay demonstrated that interactions of SPTBN1 with the capsid are independent of the host factor cyclophilin A. Preliminary data revealed a delay in early time points of uncoating in vivo when SPTBN1 was knocked down. Furthermore, using the cyclosporine washout assay, we aim to determine the role of SPTBN1 in HIV-1 uncoating. We anticipate that understanding uncoating kinetics and the role of host cell factors will open a door for the development of new capsid inhibitors.

22. How Effective is Dry Needling in Pain Control for Overhead Sports Athletes with Rotator Cuff Injuries?: A Critically Appraised Topic

Daphne Gonce, Michael Hudson

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Faculty Supervisor: Michael Hudson
Athletic Training

Dry needling is a popular intervention to use for myofascial pain and/ or trigger points. Dry needling is the insertion of monofilament needles to address various neuromuscular syndromes. There is no standard of care for treating myofascial pain; however, other methods of treatment include cupping, therapeutic exercises, and soft joint mobilization. Utilizing Medline and the search terms, “Dry AND Needle; Pain Management; and Athlete” the search yielded 56 articles. The articles were evaluated using PEDro with scores ranging from five to eight out of ten. The aim of this critical appraisal was to evaluate the effects dry needling on pain management for the shoulder and shoulder girdle complex. Dry needling can significantly improve pain response from a shoulder injury. This therapy is clinically effective with this population and highly recommended as a secondary certification.

23. Build-A-Boomer Bear, Choice-Overload in College Students

Emily Green

Faculty Supervisor: Melissa Fallone
Psychology

Choice overload occurs when an excessive number of options leads to anxiety and indecision. While some studies support this effect, others do not, suggesting the need for further research with different variables. Participants (N = 187) of this online study “dressed a bear” by selecting a hat, top, bottoms, shoes, and an accessory. They were randomly assigned to one of three choice conditions representing a low, moderate, or high number of options. Decision-making measures and sample-satisfaction measures assessed perceptions of

choice difficulty, confidence, and satisfaction. Participants with more choices found decision-making more difficult ($p = .036$), but choice condition had no significant effect on enjoyment ($p = .678$) or frustration ($p = .565$). Difficulty and frustration were correlated ($r = .514$, $p < .001$), but satisfaction and regret were unaffected. Results indicate extensive choices increase decision difficulty but do not necessarily impact emotional responses. Differences from past studies suggest that contextual factors influence choice overload effects. Findings have implications for marketing, education, and healthcare, where offering a moderate number of choices may enhance decision-making experiences.

24. Dancers Show More Accurate Trunk-Pelvic Joint Angle Reproduction While Wearing a Jacket Augmented With Elastic Bands

James Hackney, Sarah Wilcoxon, Jon Tallerico, Matthew Palmer, Ashleigh Waltz, Kyle Stringer, Andrew Hall

Faculty Supervisor: Kim Ennis
Physical Therapy

Purpose: The Backalast® compression jacket is intended to improve posture and proprioception of the trunk and shoulder girdle for dancers and dance students during dance training by way of elastic bands in the rear of the garment (which include bands enclosing the inferior thorax). This study was intended to investigate whether there is evidence to support those objectives. **Materials and Methods:** Fifteen dance students participated (4 males, mean age 19.9 ± 1.4 years old). The dependent variables of trunk-pelvis angle and proximity of trunk axis to global vertical for each participant were measured using optical motion capture before and after the completion of a series of trunk movements. The

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Helen Hayes model, which we used to represent the trunk, includes the shoulder girdles as part of the trunk. We compared the effect of the type of garment (Backalast® or control compression shirt) worn upon the two dependent variables, within-subject with paired t-tests. The order of whether Backalast® or control compression shirt was worn first was alternated between participants. Results: The pre/posttest difference in trunk proprioception as represented by the construct of ability to reproduce trunk-pelvis angle wearing the Backalast® was 0.

25. The Use of Blood Flow Restriction with Exercise in Patients with Postural Orthostatic Tachycardia Syndrome – A Case Study

Carly Hamlyn, Ryan Gordon

Faculty Supervisor: Ryan Gordon
KIN - Exercise Science

Postural Orthostatic Tachycardia Syndrome (POTS) is a form of dysautonomia characterized by an increase in heart rate by 30 bpm or having a heart rate greater than 120 bpm upon standing. Common symptoms of POTS include dizziness, nausea, exercise intolerance, pre-syncope, and syncope. Exercise can be difficult for patients with POTS, especially when it involves changes in posture, and not much is known to resolve symptoms during exercise. Blood flow restriction (BFR) training is a modern exercise training technique in which blood flow to localized and active muscle is partially restricted using bands or cuffs. Due to its effects on blood flow, we sought to explore how BFR training could impact exercise tolerance in individuals with POTS. This case study investigated heart rate, blood pressure, and rate of perceived exertion responses during aerobic and resistance exercise bouts performed with and without BFR in an individual diagnosed with POTS. While there were minimal differences in heart rate or

blood pressure, BFR improved perceived effort during the aerobic and resistance exercise sessions. In individuals with POTS, BFR may enhance exercise tolerance, however, more research is needed.

26. Investigating the Impact of Emotionally-Charged Words on Heart Rate in Transgender Adults

Tammi Hardin, Kara Pruett

Faculty Supervisor: Sarah Lockenvitz
Speech Language Pathology

Transgender individuals often face unique barriers in healthcare, including the impact of language used in clinical settings. This study examined whether emotionally-charged words provoke physiological stress responses in transgender adults by measuring heart rate at baseline and after exposure to neutral, positive, and emotionally-charged words. Seven transgender adults participated in the within-subjects experiment. A repeated measures ANOVA and ANCOVA were conducted to compare heart rate differences across word categories while controlling for baseline heart rate. Results showed no statistically significant differences in heart rate across categories, but large effect sizes suggest individual variability. Emotionally-charged words slightly reduced heart rate compared to neutral words when baseline heart rate was accounted for, contradicting the researchers' initial hypothesis. Limitations such as a small sample size and high multicollinearity among word categories warrant further research. Future studies should explore additional physiological measures and qualitative factors to better understand the impact of language on transgender individuals in healthcare settings.

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27. Evaluating the Influence of Intuitive Eating Principles on Internalized Weight Stigma Through a University Wellness Program

Renae Harrison, Jaime Gnau

Faculty Supervisor: Jaime Gnau
Dietetics and Nutrition

Weight-inclusive approaches have shifted modern nutrition care, with Levinson et al. (2024) establishing the dangers of weight-focused care, especially with high levels of internalized weight stigma (IWS). IWS, a social devaluation of larger bodies, is associated with negative health outcomes like chronic inflammation, mental illness, behaviors of disordered eating, repetitive dieting, and body dissatisfaction (Larkey et al., 2021; Levinson et al., 2024; Braun et al., 2022). Intuitive eating (IE) has been shown to improve eating behaviors and body perception (Braun et al., 2023; Hoare et al., 2021). The goal of this study is to determine how the application of IE can affect the burden of IWS in students and employees in an online university wellness program. Data were collected through pre- and post-program surveys using validated tools, the IES-2 Scale and WBIS-M to assess the self-acceptance of IE and the personal impact of IWS. Thematic analysis of focus groups and statistical analysis of survey data will be conducted to determine if IE can be successful in shifting eating behaviors away from weight-focused attitudes. This study is vital in understanding how practices like IE can influence health behaviors relating to weight perception.

28. Assessing the Validity of Alternative Syringe Brands for IDDSI Flow Testing

Harper Henson, Peyton Steele, Flannery Beeler

Faculty Supervisor: Bonnie Slavych
Speech Language Pathology

Dysphagia, a swallowing disorder that can lead to aspiration and malnutrition, is often managed through liquid thickening to slow flow to enhance swallowing safety (Hanson et al., 2019). The International Dysphagia Diet Standardisation Initiative (IDDSI) developed a standardized flow test using a 10-mL syringe to classify liquid consistency, ensuring reliable and reproducible thickness levels across clinical settings (Steele et al., 2024). However, research has shown that different syringe models can yield varying results due to differences in internal geometry, emphasizing the importance of using the recommended syringe to maintain accuracy (Dantas et al., 2018). Implementing standardized protocols for thickened liquids ensures continuity in patient care, reduces variability in dysphagia management, and minimizes the risk of aspiration-related complications.

29. Assessing Muscular Performance Across the Menstrual Cycle in Collegiate Softball Players

Shelby Houchlei, Andrew Falk, Raven Chance, Shane Miller, Sarah Wood, Sarah Peters, Adrien Martens, Ryan Gordon

Faculty Supervisor: Ryan Gordon
KIN - Exercise Science

The menstrual cycle is characterized by fluctuations in estrogen and progesterone that may impact physiology and training performance in females. We investigated whether there were differences in muscular performance measures throughout the menstrual cycle in NCAA D1 softball players. Eleven collegiate female softball athletes participated in this study. The initial visit consisted of collecting descriptive data such as bodyweight,

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height, body composition, resting metabolic rate, and menstrual cycle history. The three remaining visits involved performance testing during their respective early follicular, ovulatory and mid luteal menstrual cycle phases. During each of those visits, participants performed countermovement jumps on a force plate, three 15-yard sprints using timing gates, and three barbell back squats at 70% one repetition maximum using a linear position transducer. These findings will add to existing literature in determining how muscular performance might be impacted throughout a female's menstrual cycle.

30. From Kitchen to Confidence: Enhancing Nutrition Literacy and Social Connection in College Students

Isabella Jung, Laura Vandenberghe

Faculty Supervisor: Hillary Roberts
Dietetics and Nutrition

Teaching kitchens are experiential learning environments that combine nutrition education, cooking skills, and other multidisciplinary facets of health promotion (Eisenberg et al., 2023). These programs are correlated with higher cooking self-efficacy, decreased reliance on convenience foods, and improved psychosocial well-being (Novotny et al., 2022). Research also suggests health-focused interventions are most effective during college years as young adults tend to focus on self, solidify food preferences, and navigate social and cultural pressures related to food (Drzal et al., 2025; French et al., 2024). This mixed methods study, guided by the social cognitive theory framework, examined how a teaching kitchen impacted nutrition literacy, cooking skills, and social connectedness among college students. Seventeen students participated in the 3-session teaching kitchen and completed pre- and post-surveys, which included the

CAFPAS Self-Efficacy, Townsend Fruit and Vegetable Inventory, and Sense of Social Fit validated scales. Additionally, focus group discussions provided valuable insights into how teaching kitchens support the health and wellbeing of students. This study is ongoing, and quantitative results will be presented.

31. Learned Helplessness: An Online Replication and Validation

Arshpreet ("Sunny") Kandola, D. Wayne Mitchell, Ph.D.

Faculty Supervisor: D. Wayne Mitchell
Psychology

The current study entails the partial replication of a classic learned helplessness two-phase triadic design experiment (Hiroto & Seligman, 1975) within an online learning context, and aims to validate a new attributional style self-report measure designed to identify individual differences in tendencies to develop learned helplessness consistent with Abramson and colleagues' (1978) reformulation of the hypothesis. It is hypothesized that a group initially and repeatedly exposed to unsolvable anagrams will perform worse than groups initially exposed to solvable anagrams on a subsequent identical solvable anagram measure, with regard to mean response latencies, number of solution trials, percentage of correct trials, and slope of response latencies across trials; and individuals with global, stable, and internal (i.e., pessimistic) attributional styles will demonstrate greater susceptibility to learned helplessness than those with specific, unstable, and external (i.e., optimistic) attributional styles on both the new Learned Helplessness Attributional Scale (LHAS; Luse & Burkman, 2022) and the original Attributional Style Questionnaire (ASQ; Peterson et al., 1982), with the new measure demonstrating greater predictive validity.

32. Parent Perceptions of Stigma Associated with Speech Sound Disorders

Callie Langley, Alexis Shane

Faculty Supervisor: Sarah Lockenvitz
Speech Language Pathology

Previous research has explored the stigma surrounding speech sound disorders (SSDs). However studies focusing on how parents perceive, experience, and respond to this stigma in the context of their child's communication challenges remain limited. This study seeks to address this gap by examining parental perspectives on SSD-related stigma through survey data. The survey analyzes their concerns, perceived societal attitudes, and perceived emotional, social, and psychological impact on both parents and their children. By gaining a deeper understanding of these perspectives, this research aims to shed light on how stigma influences parental stress, self-esteem, and the ways in which they navigate support systems for their child. Data collection and analysis is ongoing, and the findings will contribute to existing literature by offering valuable insights into parental perspectives regarding their child's SSD, ultimately laying the foundation for further exploration of the impact that parental attitudes have on their children's therapeutic gains, self-esteem, and overall well-being.

33. Tissue and Sex-Dependent Effects of A-to-I Editing and Innate Immunity in Mice.

Skyler Lee, Kelsey Kendrick, Claire Nichols,
Christian Rivas, Randi J. Ulbricht

Faculty Supervisor: Randi Ulbricht
Biomedical Sciences

Innate immunity is the body's first defense against viral infections, with Adenosine-to-Inosine (A-to-I) RNA editing by ADAR preventing harmful immune activation. Inflammatory factors like ADAR1, TNF- α , and MDA5 are induced during immune activation, with stronger expression of TNF- α and MDA5 in females. However, little is known about ADAR in female animals. This study aims to determine whether ADAR1 RNA editing in skeletal muscle is sex-specific or influenced by immune activation. Sanger sequencing was used to measure individual RNA editing levels, and ADAR1 protein levels were assessed. Females, with more ADAR1p150 mRNA, were expected to have more editing, protein production, and a controlled immune response. Results showed that immune activation increased FLNB editing in males but had no significant effect in females. FLNA showed no treatment effect but had sex-dependent editing differences. Additionally, RPA1 editing was higher in females. These results suggest that the impact of sex on inflammatory factors may affect the rate of RNA editing of select transcripts and protein production in select tissues. Thus, advancing our understanding of RNA editing's role in immune responses and sex-dependent diseases.

34. Dataset Development for AI-Based Leukocyte Tracking in Microcirculation

Danielle Lynch, Lindsey Shepard, Spencer Thomas, Corynn Knight, Jianjie Wang

Faculty Supervisor: Jianjie Wang
Biomedical Sciences

Leukocyte rolling and adhesion are key in immune response and inflammation. Quantifying these dynamics in vivo is crucial for understanding diseases, but current manual tracking methods are time-consuming and variable. Our project aims to develop an AI-based automated leukocyte tracking method for

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efficient and accurate analysis of leukocyte motion in mouse cremaster microvessels. This study focuses on dataset creation using time-lapse imaging from cremaster venules in C57BL/6 mice. Leukocytes were labeled with Rhodamine 6G via tail vein injection. ImageJ/Fiji was used for detection, tracking, and analysis. The dataset will support deep learning in Python, utilizing advanced computer vision algorithms to track leukocyte-endothelium interactions, ensuring robust, reproducible, high-throughput measurements. By integrating AI, we aim to enhance the accuracy and speed of leukocyte motion analysis, reducing human error and enabling large-scale studies. This AI-driven approach could significantly advance research in immunology, vascular biology, and inflammatory diseases, providing deeper insights into leukocyte behavior in various pathological conditions.

35. Testing Cardiorespiratory Performance Across Menstrual Cycle Phases in Female Endurance Athletes

Adrien Martens, Sarah Peters, Sarah Wood, Jon Rattenborg, Shelby Houchlei, Ryan Gordon

Faculty Supervisor: Ryan Gordon
KIN Exercise Science

Estrogen and progesterone concentrations fluctuate throughout phases of the menstrual cycle. This influences various aspects of physiology, which could impact sport or training performance. We aimed to determine if maximal aerobic capacity (VO₂max) fluctuates throughout specific phases of the menstrual cycle. This study included young, endurance-trained women (n=6; 21 ± 1 yr). During their baseline visit, anthropometric measurements were recorded, which included body composition assessment (body fat % = 22.5 ± 6). Visits two, three, and four required participants

to complete graded exercise tests to determine their VO₂max during the early follicular, ovulatory, and mid luteal phases of their cycles, respectively. To determine further visits, manual day-counting as well as predictions from a cycle tracking app (FLO) were used to anticipate menstrual cycle phases. Currently, VO₂max values appear to peak during the ovulatory (mean = 51.2 ml/kg/min) and mid luteal (mean = 51.2 ml/kg/min) phases. Further data collection is necessary to make more definitive conclusions.

36. University Musicians' Experiences with Performance Anxiety From a Phenomenological Approach

Olivia McIntyre, Laura Salem, Dr. Keith McShan

Faculty Supervisor: Keith McShan
KIN - Physical Education, Exercise Science

Music performance anxiety (MPA) is a common phenomenon for musicians of all calibers; however, there is a lack of research for university musicians. Therefore, this research study explores two questions, 1) how university musicians handle MPA and 2) what resources these musicians need for managing MPA.

Participants (N = 7) were recruited from a Midwest university's band program using flyers, email, and discussions at rehearsals. Participants scanned a QR code that led them to a consent form and demographic survey, and upon completion, participants were contacted by the lead PI with an interview-scheduling link. Using an interpretative phenomenological approach, participants completed a semi-structured interview, lasting an average of 38 minutes. Qualitative recording software Otter.ai was used to record and transcribe the interviews.

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Results from this study include themes, which include anxiety resulting from performance pressure, coping methods, and a desire for better outreach from mental health workers to musicians. This study helps to highlight the need for MPA resources for university musicians. Future research should be focused on finding the most effective ways of teaching university musicians methods of managing MPA.

37. Effects of Nicotinamide on Nucleotide Excision Repair and Post-Translational Modifications in *Tetrahymena Thermophila* Exposed to Ultraviolet Light

Talon Mitchell, Joshua Smith

Faculty Supervisor: Dr. Joshua Smith
Biomedical Sciences

Maintaining genomic stability is crucial for cellular health, especially under environmental stress like ultraviolet (UV) light. UV-induced DNA lesions are primarily repaired by nucleotide excision repair (NER), a process influenced by chromatin structure and post-translational modifications (PTMs). This study investigates how histone deacetylase (HDAC) inhibition by nicotinamide (NAM) affects NER efficiency in *Tetrahymena thermophila*, a model with two nuclei exhibiting distinct chromatin states. We examine the timing of NAM treatment—before vs. after 100 J UV exposure—on cell survival, repair efficiency, and PTM regulation. A DNA damage assay will assess lesion repair, while qRT-PCR will monitor NER gene and PTM enzyme expression. Additionally, deleting RAD23, a damage-recognition gene, will help determine its role in PTM modulation under NAM treatment. Comparing wild-type and RAD23-deficient strains will provide insights into HDAC inhibition, PTMs, and NER, potentially informing therapeutic strategies for genomic stability and skin cancer prevention.

38. Revising and Shortening the Co-Rumination Questionnaire

Caleb Niccum, Eunice Obeng, Camryn Burns, Jackson Deal, John Voss, Natalie Scott

Faculty Supervisor: Leslie Echols
Psychology

The 27-item Co-Rumination Questionnaire (Rose, 2002) measures rumination between friends within nine content areas consisting of two factors: when we talk about our problems and when we talk about a problem one of us has. In addition to the length and repetitiveness of the questionnaire, which could be problematic for administration in classroom settings, several items do not neatly fall within one of the two factors. This study aims to reduce the length of the co-rumination questionnaire to nine items, one per content area, which will increase the validity and reliability. An exploratory factor analysis (EFA) was conducted on the original 27-item questionnaire to identify the items most correlated with each factor, identifying low item loadings and cross-loadings that improved with a newly identified model. A sample of approximately 500 middle school students took the shortened 9-item version, and confirmatory factor analysis (CFA) was used to establish significant standardized estimates and good model fit.

39. Students' Judgments of Eyewitness Lineup Procedures and Outcomes

Eunice Obeng, Jennifer Sample, Faith Byrum, Kim Ho Nguyen Thien, Paige Mazeitis, David Zimmerman

Faculty Supervisor: David Zimmerman
Psychology

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A sample of students completed a survey assessing attitudes on optimal eyewitness lineup procedures and valuations of eyewitness identification outcomes. These data will inform utility models, expanding on a prior study comparing stakeholder judgments (Zimmerman & Rodriguez, 2024). Data were collected in Fall 2024 from 224 MSU undergraduates (71.0% female, 28.1% male, 83.5% White, 90.6% Non-Hispanic). Ages ranged from 17 to 49 ($M = 19.11$, $SD = 3.22$). Politically, 51.3% identified as Republicans, 29.9% as Democrats, and 17.0% as Independents. Participants assigned evaluative weights (-100 to 100) to lineup and showup outcomes. They also rated 11 policy considerations on a 7-point Likert scale. Students completed the survey in a computer lab for partial course credit. Correct IDs of guilty suspects had the highest positive utility (lineups: $M = 69.75$, $SD = 37.44$; showups: $M = 69.94$, $SD = 35.97$). Innocent suspect IDs were negatively rated. The most valued policy considerations were obtaining incriminating evidence ($M = 6.48$, $SD = .78$) and guiding investigations ($M = 6.15$, $SD = 1.01$).

40. Effects of SES Roles on Job Interview Self-Efficacy and Faking Intentions

Nakul Patel

Faculty Supervisor: Melissa Fallone
Psychology

The perceptions job candidates have about one another have not been well studied in the field of selection and hiring; more specifically, the effects that socioeconomic status (SES) has on perceptions of job interview self-efficacy and faking intentions. This experimental research study examined the effects that hypothetical SES roles have on job interview self-efficacy (SE) and faking intentions (FI). The participants in the study ($N = 127$) were university students

enrolled in Psychology courses. The participants completed the study in a campus computer lab where they were randomly assigned to SES scenarios, representing varying conditions of SES (e.g., low SES, middle SES, high SES) and one control group with no SES information provided. After reading their assigned roles, participants completed the SE and FI questionnaires. ANOVAs conducted to test the hypothesis that the participants assigned to the low SES condition would have higher faking intention scores and lower SE scores than the middle, high, and control conditions found that participants in the low SES conditions had higher FI scores and lower SE scores than the middle and control conditions, but not the high condition.

41. Muscular Performance and Perceived Performance Readiness in Collegiate Athletes Across the Menstrual Cycle

Sarah Peters, Sarah Wood, Adrien Martens,
Shelby Houchlei, Ryan Gordon

Faculty Supervisor: Ryan Gordon
KIN - Exercise Science

We assessed muscular performance, including strength and endurance, along with perceived performance readiness, including fatigue, motivation, strength, and energy during three phases of the menstrual cycle (early follicular = EF, ovulatory = OV and mid luteal = ML) in 11 eumenorrheic collegiate softball players. In visit 1 of 4, participants completed body composition and resting metabolic rate testing. In visits 2-4, participants self-reported perceived performance readiness. Following a standardized warm-up, participants performed bench press 1 rep-maximum (1RM) and bench press repetitions to failure (RTF) at 70% of 1RM during each phase. Motivation and energy peaked during ML, whereas strength peaked during OV; fatigue was

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lowest during ML. Bench press 1RM peaked during ML (52.3 ± 5.6 kg). Bench press RTF also peaked during ML (12.8 ± 3.3). Despite this, no statistical significance was observed between EF, OV, and ML. Collectively, muscular performance and perceived performance readiness may be enhanced during the ML phase in females. Further data collection will clarify how muscle strength and endurance, along with perceived performance readiness, may be impacted throughout the menstrual cycle.

42. Beyond the Nerve: Exploring Ultrasound vs. Nerve Conduction Studies in Diagnosing Carpal Tunnel Syndrome: A Critically Appraised Topic

Kaitlyn Petty, Allan Liggett

Faculty Supervisor: Allan Liggett
Athletic Training

Carpal tunnel syndrome (CTS) is categorized by a group of symptoms such as paresthesia in the thumb, index, and middle finger; pain worsening at night; weakness in gripping objects; a positive Tinel's or Phalen's special test; and a conclusive diagnostic nerve conduction study. Nerve conduction studies (NCS) are the gold standard for diagnosing radiculopathies such as CTS. This critically-appraised topic evaluates the diagnostic accuracy of ultrasonography to clinically diagnose CTS. A systematic search was conducted using medical journal databases such as Academic Search Complete and CINAHL, with the search terms including "Diagnostic Ultrasound AND Carpal Tunnel Diagnosis," to identify relevant articles using methodological criteria. Selected studies included cross-sectional and prospective case-controlled designs. These articles were critically appraised using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) tool

to assess bias risk, and the Center for Evidence-Based Medicine (CEBM) tool to ensure reliability. The findings concluded the use of ultrasonography to diagnose CTS showed high accuracy when compared to the gold standard, NCS.

43. The Impact of Campus Climate on LGBTQ+ Athletes' Psychological Wellbeing

Kathryn Plautz, Jordan Allen, Maia Cheong,
Sophia Dela-Coleta, Ashleen Grin

Faculty Supervisor: Ashley Houston
Psychology

Previous research has shown that LGBTQ+ students experience isolation, harassment, and hostile campus climates. Protective factors such as social support and engagement serve to buffer the effects of a hostile climate on educational and psychological outcomes. Student athletes face higher levels of stigma surrounding mental health but have protective factors in place such as relationships with their coach and sport. This study aims to explore the role of campus climate on LGBTQ+ college athletes' psychological wellbeing and protective factors for LGBTQ+ athletes. Participants from this study include 2 LGBTQ+ student athletes from a local NCAA Division I mid-size public university. Participants were obtained through snowball sampling to participant in a semi-structured interview that explored their collegiate athletic experience, well-being, motivation, and LGBTQ+ identities. The results of this study will highlight the effects of a hostile climate on LGBTQ+ athletes' well-being and the use of community building and athletic identity as protective factors. Recommendations include coach belonging-focused professional development, enforceable anti-discrimination policies and further research examining intersectional identities.

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44. The Role of SPTBN1 in Nuclear Import Of HIV-1 in Human Microglial Cells

Olivia Reinwald-Johnson, Amy Hulme

Faculty Supervisor: Amy Hulme
Biomedical Sciences

Human immunodeficiency virus (HIV-1) is a pathogen which causes chronic illness that, as of 2023, has infected approximately 39.9 million people worldwide. Many current HIV-1 therapies focus on blocking steps of viral replication. The goal of this thesis research focuses on the effect of the cellular protein SPTBN1 in the nuclear import step of HIV-1 replication. To better understand how SPTBN1 affects HIV-1 nuclear import in CHME3 microglial cells, the formation of 2-LTR circles will be measured. The circularized 2-LTR form of the HIV-1 genome can be detected when viral DNA has entered the nucleus but failed to integrate into the host cell genome. Before 2-LTR circles can be accurately quantified using qPCR, the primer efficiencies must be determined for the primer sets that will be used. Once this is accomplished, siRNA knockdown of SPTBN1 will be performed and confirmed before infecting CHME3 cells with HIV-1. DNA will then be isolated from the infected cells and qPCR will follow. These experiments will allow us to further understand the role of cell factors like SPTBN1 in HIV nuclear import.

45. Intuitive Eating Acceptance: Differences Between College Students and University Employees

Samantha Selsor

Faculty Supervisor: Jaime Gnau
Dietetics and Nutrition

Intuitive Eating (IE) is a dietitian-developed anti-dieting approach. Current research has been conducted on distinct age demographics. However, no studies have compared two distinct age groups. The study's purpose is to identify differences in IE acceptance between college students and older adults and to examine how IE acceptance affects body image perception through an online university wellness program. Main research questions include: 1) What are the differences in IE acceptance among education levels and age groups related to college students and employees, 2) What are the effects of IE on the perceptions of body image, and 3) What are barriers and motivators to implementing IE concepts? This research is important because it bridges gaps in current literature regarding specific topics and demographics. This study was conducted through an online IE program containing two five week parts. Each part contained a weekly module correlating with an IE principle. Participants self-enrolled in the program. This is a mixed methods study. Pre- and post-surveys assess IE score (IES-2), weight stigma (WBIS-M), and demographics. Qualitative data are being collected through discussion. Data collection is underway and results are forthcoming.

46. Enhancing Student Empathy and Perceptions Through Aging Simulation Suits

Faith Stark, Maryanne Vezino

Faculty Supervisor: Marcia Himes
Physical Therapy

Purpose: To determine whether the time taken to complete a geriatric simulation with impairments, compared to the pre-test mobility course without impairments, predicts post-test scores. Methods: The UCLA Geriatrics Attitudes Scale (UCLAGA) was completed before and after simulation activities. A timed mobility

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activity was completed sans impairments, then participants donned a geriatric simulation suit and completed the same timed mobility course. Results: The model was not statistically significant, $F(1,124)=0.02, p=.88$. Time difference did not significantly contribute to the model and was not a predictor of post-test scores. Conclusion: Since time did not significantly impact outcomes, the act of participating in the geriatric simulation itself proved beneficial in improving students' perception of and empathy toward older adults. This suggests that, regardless of how long the mobility activity took, the experience could translate to clinical practice by enhancing professionals' interactions with older adults, shifting student attitudes toward working with seniors, and fostering greater empathy among clinicians

47. Evaluating the Accuracy of McMurray, Thessaly, and Apley's Test for Meniscal Diagnosis versus MRI and Arthroscopic Findings: A Critically Appraised Topic

Evan Stewart, Dr. Michael Hudson

Faculty Supervisor: Michael Hudson
Athletic Training

Meniscal injuries are common knee pathologies, particularly in active populations. This critically appraised topic evaluates the diagnostic accuracy of McMurray, Thessaly, and Apley's tests compared to MRI and arthroscopy. A systematic review of peer-reviewed studies published between 2000 and 2023 identified relevant research that reported diagnostic accuracy metrics for these clinical tests. Articles chosen were appraised using QUADAS-2 to evaluate the risk of bias and the CEBM levels of evidence to verify reliability. The Thessaly test at 20 degrees of knee flexion demonstrated superior diagnostic accuracy compared to

McMurray and Apley's tests, with high sensitivity and specificity for medial meniscus tears. Shekarchi et al reported varying sensitivities and specificities for medial and lateral meniscus tears when compared to MRI and arthroscopy separately. While the Thessaly test shows promise, clinicians should recognize test limitations and consider combined assessment approaches for optimal diagnosis.

48. Social Media Strategies for Attracting and Retaining Students in Nutrition and Dietetics Programs

Abbi Vachon, Jacklyn Goodman, Sarah Murray, Natalie Allen

Faculty Supervisor: Sarah Murray
Dietetics and Nutrition

Social media is key for university brand promotion, influencing student recruitment. Studies identify five content categories that elicit positive engagement: university images, generating awareness, acknowledgements, athletics, and town/city images. This study examined the effectiveness of these categories in attracting students to a midwestern university's nutrition and dietetics program via Instagram and Facebook. For each of the recommended content categories, four posts were created, totaling 20 observed posts. Engagement (likes, comments, shares) was analyzed. University images yielded the highest engagement on Instagram with a mean of 50 likes, while acknowledgements yielded the highest engagement on Facebook with a mean of 10.75 likes. Athletics had the second-highest engagement on both platforms with a mean of 45.5 likes on Instagram, and 10.25 likes on Facebook. Comments and shares showed low engagement. For program promotion, using university images, acknowledging student success, and including athletics all increase

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engagement. This research shows that posts with faculty, staff, students, and familiar backgrounds create more engagement, supporting social media's role in branding and relatability with prospective students.

49. Functional Dry Needling Vs Manual Ischemic Compression for Myofascial Pain Syndrome and Myofascial Trigger Points

Cassandra Weaver

Faculty Supervisor: Allan Liggett
Athletic Training

Myofascial pain syndrome (MPS) and myofascial trigger points (MTrPs), are frequently treated in sports medicine. Alvarez et al. define MPS as a regional pain syndrome involving sensory, motor, and autonomic symptoms caused by MTrPs in skeletal muscle, tendons, or fascia. MTrPs, found in 85% to 95% of cases (Zhuang et al.), contribute to pain, restricted movement, and impaired performance. Treatment options for MTrPs are categorized as invasive or conservative. Dry needling (DN), an invasive technique, uses a thin monofilament needle to trigger a local twitch response, modulate pain, and improve function. Ischemic compression (IC), a conservative approach, applies sustained manual pressure to relieve muscle tension and discomfort. Both methods are widely used, yet debate continues over their comparative effectiveness and whether DN's higher cost and training requirements are justified.

This critically appraised topic (CAT) evaluates DN and IC for MTrP treatment, offering insights to inform clinical decision-making in sports medicine.

50. Effects of Instrument Assisted Soft Tissue Mobilization Techniques on Ankle Range of Motion in Athletic Populations

Adam Weaver

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Athletic Training

Restricted range of motion (ROM) at the ankle joint is a common contributing factor toward the occurrence of acute and chronic injuries. This disruption to the biomechanics of the lower body often results in injuries both to the ankle itself and to as well as the knees and hips. This injury pathology is common in athletic training and sports medicine clinics. Many therapeutic interventions are utilized to help improve ankle ROM and joint mechanics. However, little information is available on the best interventions and the magnitude of the proposed effects. The Graston technique and other instrument-assisted soft tissue mobilization (IASTM) protocols are therapeutic intervention techniques that are utilized by clinicians to influence tissue dynamics and create subsequent improvements to joint ROM. The purpose of this critically appraised topic is to investigate the effects of Graston or IASTM intervention protocols on ankle joint Range of Motion among athletic individuals. A review of the available literature and analysis of the reported results will provide clinicians with a better understanding of the effectiveness of Graston and IASTM.

51. Investigating The Impact of Hypochlorous Acid Treatment on Bacterial Infected Human Osteoblast Cell Culture

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Faculty Supervisor: Joshua Smith
Biomedical Sciences

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This study investigates hypochlorous acid (HOCl) as an antiseptic for bacterial infections resulting from compound fractures, where the bone breaks through the skin barrier. According to the National Center for Health, most osteomyelitis cases are postoperative. HOCl, an oxidative compound produced by neutrophils, is widely used in hospitals to kill pathogens on the skin. The gram-negative bacterium *Pseudomonas aeruginosa* will be used to test the efficacy of HOCl at 0 ppm, 5 ppm, and 50 ppm on osteoblast-cultured cells. It's hypothesized that 5 ppm would partially inhibit bacterial growth, while 50 ppm would result in near-total elimination. Eosin methylene blue (EMB) agar, selective for gram-negative bacteria, was used to measure colony-forming units (CFUs). A serial dilution of a 0.1 OD₅₀₀ culture to 10⁻⁴ provided optimal CFU counts. Results showed minimal inhibition at 5 ppm and over 99.9% inhibition at 50 ppm, confirming the hypothesis. Future work will involve culturing osteoblasts, infecting them with *P. aeruginosa*, and treating with HOCl to determine its effectiveness in preserving osteoblast viability while eliminating bacteria. This study aims to reduce postoperative osteomyelitis rates and support new treatment options.

52. Skipping Meals: The Impact of School Satisfaction and Nutrition

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Faculty Supervisor: Adena Young-Jones
Psychology

Adequate and nutritious food is crucial for optimal brain activity, motivation, and energy. The brain requires sufficient calories throughout the day to maintain our mood and thoughts. However, empty calories, such as foods high in sugar and fat, are not nearly as efficient as those from complex carbohydrates, proteins,

vegetables, fruits, and organic foods (Griel et al., 2006; Holesh et al., 2017; Puddu et al., 2021). Thus, proper nutrition is potentially one mechanism to promote psychological well-being—a factor vital for student success. This study sought to explore the connection between food and the well-being of college students by examining food inventory, perceived school satisfaction, psychological well-being, and academic motivation. The results revealed statistically significant differences between the two groups: those who do not skip meals and those who do daily. In terms of healthy eating and basic needs satisfaction, participants who did not skip meals scored higher on both the Plan Your Plate Food Inventory and the Basic Needs Satisfaction at College Scale.

53. Overfeeding Meal Influences Metabolism, Appetite, Satiety, and Caloric Intake in Obese-Prone and Obese-Resistant Individuals

Sarah Wood, Sarah Wood, Adrien Martens,
Sarah Peters, Shelby Houchlei, Jon Rattenborg,
Ryan Gordon

Faculty Supervisor: Ryan Gordon
KIN – Exercise Science

We explored how self-reported appetite and satiety, resting metabolic rate (RMR), caloric intake, and appetite-regulating hormones are affected by a single overfeeding meal in obese-prone (OP) and obese-resistant (OR) men and women. Participants' RMR and body composition were assessed during their initial visit to the lab (V1). During visit two (V2), participants self-reported their appetite and satiety, and a five mL blood sample was collected. Participants consumed candy ad libitum for 30 minutes (overfeeding meal) and then self-reported their post-meal appetite and satiety. An additional five mL blood sample was collected 30 minutes after the meal ended.

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Participants returned the morning after V2 for their third visit (V3). Participants self-reported their appetite and satiety, a five mL blood sample was collected, and a second RMR assessment was completed. Caloric intake during the meal was higher in OR. Self-reported satiety increased post-meal in both OP and OR. Post-meal satiety was higher in OR than OP. Caloric intake from 24-hr food logs was higher in OP than OR. Analysis of appetite-regulatory hormones (insulin, ghrelin, GLP-1) will help clarify how an overfeeding meal affects OR and OP individuals.