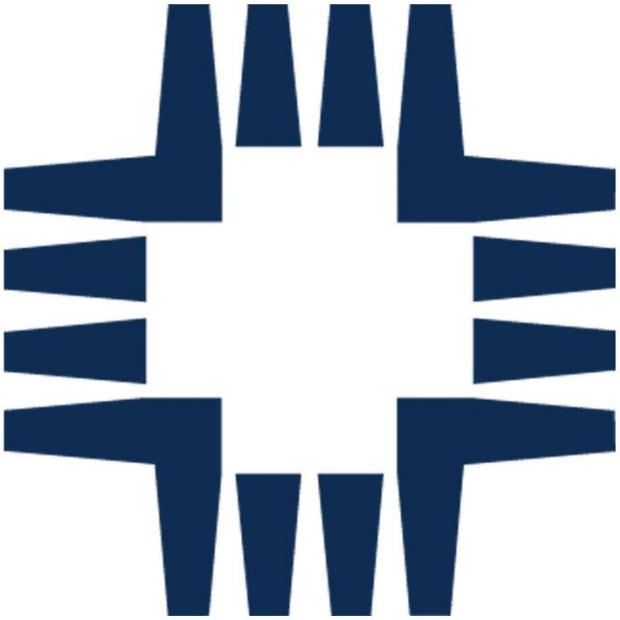
14th Annual

# Academic and Research Symposium

Concordia University, Nebraska

April 28, 2025



# ACADEMIC AND RESEARCH SYMPOSIUM – PRESENTER SCHEDULE

| | Dunklau Lobby | | Dunklau 142 | Dunklau 143 |
|---|---|---|---|---|
| | **Poster Session A** | | **Oral Session A1** | **Oral Session A2** |
| **2:30 PM - 3:30 PM** | Seanna Patterson<br>Joseph McQueen<br>Mason Ward<br>Nathan Kurth<br>Elena Batenhorst | Hanna Bowers<br>Jason Payne<br>Terrigen Sebek<br>Jenna Muntz<br>Bethany Thomas | Emily Loseke<br>Ellie Jander<br>Hope Nelson | Molly Reece<br>Adah Pflughoeft<br>Noah Leeper<br>Joshua Palacios |
| | **Poster Session B** | | **Oral Session B1** | **Oral Session B2** |
| **3:40 PM - 4:40 PM** | Katelyn Nix<br>Autumn Deterding<br>Elizabeth Marsh<br>Bradley Hallock<br>Connor Asche | Edumar garcia<br>Anthony Polley<br>Rayshun Foreman<br>Jaidan Quinn | Slade Leicht<br>Jackson Lindburg<br>David Claridge<br>Molly Frenzen | Seanna Patterson<br>Meredith Boster<br>Thomas Gorline |
| | **Poster Session C** | | **Oral Session C1** | |
| **4:50 PM - 5:50 PM** | Molly Hjelm<br>Simon Blankenship<br>Brock Olson<br>Aaron Everett<br>Emma Womboldt-Siemek | Micah Henschen<br>Zoe Lavigne<br>Martin Herrera<br>Brittney Aitken<br>Tristan Smith | Colby Sugden<br>Matthew Weismann<br>Zachary Oxar<br>Hugo Fuentes | |
| | **Poster Session D** | | **Oral Session D1** | **Oral Session D2** |
| **6:00 PM - 7:00 PM** | Riley Hoetfelker<br>Ryleigh Flesner<br>Tanner Frahm<br>Naomi Archer<br>Greta Corneliusen | Lily Psencik<br>Ransom Watts<br>Kate Griess<br>Elaina Hanson | Greta Corneliusen<br>Travis Parsons<br>Karson Sherman | Hannah Ethridge<br>Aarin Dean |
| **7:00 PM - 8:00 PM** | **Keynote Speaker: Lyman Stone**<br>**Dunklau Lecture Hall**<br>"What Tomorrow May Bring: Evidence from the Lutheran Religious Life Survey Revealing How the LCMS is Changing" | | | |

**Note**: If a presentation is done by a group, only the first presenter's name is shown above.

# Special Thanks

Thank you to all presenters, faculty sponsors, staff, judges, administrators, and attendees for supporting the symposium!

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# Poster Session A

**Monday April 28, 2025** **2:30-3:30p** **Dunklau Lobby**

## The Impact of Dance-related Rehabilitation for Parkinson's Disease Patients

Seanna Patterson

**Faculty Sponsor: Nolan Harms**

Parkinson's Disease is a neurodegenerative disease that impacts quality of life and cognitive function, partly due to lower dopamine levels. Several studies have found that music-based therapies, including dance, are effective in improving the function of Parkinson's Disease patients. Additionally, dance-related therapies have been found to improve self-esteem and social connection, facilitating dopamine release. These studies also measured the significance of partner-assisted dancing and the impact of dance-related therapies alongside stretching or treadmill-related rehabilitation plans.

## Impact of Major Sporting Events on Local Economies

Mason Ward

**Faculty Sponsor: Nolan Harms**

Usually viewed as catalysts for economic growth, major sporting events such as the Super Bowl, Olympic Games, and FIFA World Cup are said to boost tourism, create jobs and be vital to infrastructure growth. However, it is actually highly debated with some claims of no real long-term economic impact on the local economy of the host city as well as having overstated economic benefits. The aim of this study is to analyze different factors such as tourism revenue, business activity, and public spending.

## Measuring the Spatial Changes of Above-Ground Biomass in Nebraska

Nathan Kurth

**Faculty Sponsor: Joel Helmer**

Knowing above-ground biomass (AGBM) is needed to estimate an area's ability to support biodiversity. Significant changes in AGBM can disrupt regions and potentially lead to irreversible damage. This study measures the relative changes in AGBM within Nebraska counties between 1985 to 2023. To achieve this, land cover data was paired with AGBM data to obtain a dataset that was fused to the National Land Cover Dataset for estimating the biomass of each county. The results show that many counties have had a reduction in AGBM over time, with some experiencing an increase due to woody encroachment.

## Lumbar Radiculopathy and the Effects of Chiropractic Care

Elena Batenhorst

**Faculty Sponsor: Nolan Harms**

Lower back pain is one of the leading causes of disability worldwide and can originate from various ailments. Chiropractic care is a growing form of alternative medicine that focuses on spinal and joint manipulation for pain management and musculoskeletal imbalance correction and is commonly used to treat lower back pain from various causes.

## Benefits and Drawbacks of Acupuncture in Physical Therapy

Hanna Bowers

**Faculty Sponsor: Nolan Harms**

Acupuncture is a traditional practice that involves inserting fine needles, which is used to manage pain, support injury recovery, and complement conventional therapies. Benefits can include reduced chronic pain, improved circulation, and decreased reliance on medications. However, drawbacks include potential side effects, accessibility concerns and a limited scientific consensus. Several case studies highlight the positives and limitations, which offer a balanced view of acupuncture in a clinical role and its future potential.

## Geospatial Tools for Tornado Analysis

Jason Payne

**Faculty Sponsor: Joel Helmer**

On May 22, 2011, one of the deadliest tornados in the history of the United States struck Joplin, Missouri, killing 158 and injuring over 1,000. This event highlighted the vital role of spatial technology in disaster preparedness. Tools like GIS and remote sensing enhance tornado forecasting, damage assessment, and emergency response. By integrating spatial data with meteorological analysis, communities can better predict, prepare for, and respond to severe weather.

## A Spatial Analysis of Nebraska High School Football Champions

Terrigen Sebek

**Faculty Sponsor: Joel Helmer**

From the Cornhuskers on Saturday to Friday night lights, football is a substantial part of Nebraska's culture and lifeblood.  With 305 schools in the state participating in the Nebraska State Athletic Association football (NSAA), there are state champions crowned each year for classes A, B, C1, C2, D1, and D2. This research examines which areas of the state has produced the most state champions over the last 25 years. Utilizing data provided by the NSSA, this research shows the distribution of football state champion schools, revealing interesting spatial patterns.

## Agricultural Practices in Costa Rica Compared to the United States: A Study Tour Experience

Jenna Muntz

**Faculty Sponsor: Kimberly Clark**

In Costa Rica, agriculture is often characterized by smaller farms, manual labor, and a variety of crops like coffee, sugarcane, and tropical fruits, while U.S. agriculture tends to rely more on large-scale operations, mechanization, and staple crops like corn, soybeans, and wheat. Agriculture practices in Costa Rica and the United States compare farm size, crop diversity and labor practices. This project aims to highlight how climate, geography, and cultural values influence the way agriculture is approached in each country. The goal is to develop a deeper understanding of global agricultural diversity based on observations and experiential learning during a study tour.

## Unfairness of Transgender Athletes in Women's Sports

Joseph McQueen

**Faculty Sponsor: Nolan Harms**

The inclusion of transgender athletes in women's sports has sparked debate around fairness, particularly regarding physiological advantages. The literature reviews argue that transgender women who have gone through male puberty retain physical benefits such as greater muscle mass, bone density, and aerobic capacity, even after hormone therapy. This raises concerns over competitiveness and safety. Opponents believe current regulations may not fully address these problems, calling for more research and policies that balance fairness in women's sports.

## Acreage Burned in Wildfires: A Case Study from Montana

Bethany Thomas

**Faculty Sponsor: Joel Helmer**

Wildfires across the US are seemingly growing more frequent throughout the last few decades, the same being found regarding the intensity of the fires a roughly 60 percent increase. In this case study, those claims are being put to the test spatially by comparing the wildfires in Montana over the last four decades. The maps show recent wildfires across the state of Montana and the quantity of the acres burned. Observing the spatial landscape of Montana, inferences were made about the type of land coverage and vegetation that burns most frequently and easily.

# Poster Session B

**Monday April 28, 2025** **3:40-4:40p** **Dunklau Lobby**

## The Importance of Fall Prevention in Physical Therapy

Katelyn Nix

**Faculty Sponsor: Nolan Harms**

For older adults, falls often pose a risk of fractures, hospitalizations, and a reduced quality of life. Physical therapy plays a crucial role in fall prevention by targeting certain risk factors such as gait abnormalities, decreased muscular strength and poor balance. Through physical therapy exercise programs, therapists help individuals improve static and dynamic balance, muscular strength and confidence. Research demonstrates that individuals who participate in physical therapy exercise programs experience a significant reduction in the frequency of falls and related complications.

## Strangler Figs in Costa Rica

Autumn Deterding

**Faculty Sponsor: Joe Gubanyi**

Based on experiences of the Costa Rica study tour, this presentation will highlight the group of trees known as strangler figs. Focus will be directed to the habitat, size, growth habit, and appearance of strangler figs. An emphasis will be placed on the relationship between strangler figs and their host trees. Through this presentation, I hope to draw attention to one of Costa Rica's unique organisms.

## Birds of Costa Rican Tropical Rainforests

Elizabeth Marsh

**Faculty Sponsor: Joe Gubanyi**

Costa Rica is renowned for its biodiversity, including 844 species of birds. This spring, 11 Concordia students traveled to Costa Rica to study the country’s rainforest ecosystems, including tropical wet forest, tropical dry forest, and cloud forest. Students kept journals documenting flora and fauna species observed at each location. In this study, a list consisting of 44 species of birds seen is analyzed to determine what bird species are found in each tropical rainforest ecosystem. Documentation such as this of species in various regions is important for further study of their natural history.

## A Comparison of Biologicals Used in Agriculture

Connor Asche

**Faculty Sponsor: Kimberly Clark**

Biologicals are gaining significant traction in modern agriculture due to their potential to enhance crop productivity, reduce dependency on synthetic inputs, and promote environmental sustainability. This review examines three major categories of biological products: biofertilizers, biopesticides, and bio stimulants. Each class offers unique mechanisms that contribute to plant growth, stress resilience, and improved yield. A comparison provides information about how these biologicals function, their crop-specific applications, the yield benefits observed in field studies, and the key companies driving innovation in the agriculture sector.

## The Therapeutic Benefits of Cannabis

Edumar Garcia

**Faculty Sponsor: Nolan Harms**

This project explores the therapeutic benefits of cannabis, focusing on the differences between THC and CBD and their interaction with the endocannabinoid system. It highlights cannabis's role in pain management for conditions like multiple sclerosis and seizure control in epilepsy. Additionally, it examines CBD's potential in muscle recovery through inflammation reduction and relief of soreness by targeting specific bodily receptors.

## The impact of Name, Image, and Likeness (NIL) legislation on NCAA Athletes

Anthony Polley

**Faculty Sponsor: Nolan Harms**

The introduction of Name, Image, and Likeness (NIL) legislation has significantly altered the NCAA landscape, granting athletes new opportunities for compensation while creating new challenges for the NCAA and coaches. This literature review examines how NIL reshapes financial opportunity, recruiting, and power within the NCAA. With NIL coming about in 2021, the discussion on the long-term effects on collegiate sports is still uncertain. This review highlights the ongoing debate around equity, institutional control, and how NIL is reshaping collegiate sports.

## Genetics, Muscles & The Athlete Gene: How likely are you to be an athlete?

Rayshun Foreman

**Faculty Sponsor: Nolan Harms**

Athletic performance is influenced by many physical, environmental, and genetic factors. This poster will explore the interactions that genetics have when shaping your potential as an athlete. Genes like ACTN3 and ACE have been known to affect athletic traits. The presence of these genes may predispose an individual to excel in certain sports. Muscle Typing allows an individual to discover one's own ratio of muscle fiber types. As we discover more, how will this affect how we recruit? This poster aims to discuss the implications of genetics in sports and provide a better understanding.

## The Techniques of Kinematic Sequencing and Rotational Training in Maximizing Bat Speed and Exit Velocity in Baseball Swing

Jaidan Quinn

**Faculty Sponsor: Nolan Harms**

This project explores how kinematic sequencing and rotational training impact bat speed and exit velocity within a baseball swing. Using studies focused on biomechanics and rotational strength, this research compares the performance differences between amateur and elite hitters. Findings show that strong lower-body force and rotational power increase bat speed and improves power transfer through the body. This information can help athletes boost performance.

## Muscular Hypertrophy Through Resistance Training

Bradley Hallock

**Faculty Sponsor: Nolan Harms**

This presentation will review research studies performed on muscle hypertrophy, the process of muscle growth, as a result of resistance training. It examines the cellular mechanisms that drive muscle hypertrophy including protein synthesis and the hormonal pathways involved. Various training methods, such as German Volume Training and differing repetition schemes, are compared to assess their effectiveness in promoting hypertrophy. Findings indicate other factors - such as consistency, progressive overload, and adequate recovery - significantly influence the long-term success of a program.

# Poster Session C

**Monday April 28, 2025** **4:50-5:50p** **Dunklau Lobby**

## Bird Banding as a Tool for Managing Minnesota's Migratory Waterfowl

Molly Hjelm

**Faculty Sponsor: Joel Helmer**

Minnesota's 10.6 million acres of wetlands have long been utilized by the 23 waterfowl species that migrate there annually for their summer nesting, breeding, and feeding grounds. Since the 1960s, bird banding data has been used to document waterfowl migration patterns and how they have shifted over time. Utilizing data from the United States Geological Survey's North American Bird Banding Laboratory, this project analyzes Minnesota's waterfowl distribution over two time periods: 2001-2010 and 2011-2020. Species studied in this project include Blue-winged Teal (*Spatula discors*), Canvasback (*Aythya valisineria*), Wood Duck (*Aix sponsa*), Mallard (*Anas platyrhynchos*), and Pintail (*Anas acuta*). This study demonstrates how the growing use of instant encounter record digitization after 2010 has led to increased detail in encounter location and, therefore, a more accurate understanding of migration patterns and changes. Evaluating this data can enhance waterfowl management by forming science-based hunting regulations, new habitats, and wetland restoration projects.

## The Urban Rural Interface: A Case Study of Miami-Dade County, Florida 1985-2023

Simon Blankenship

**Faculty Sponsor: Joel Helmer**

Every day 2,000 acres of farmland is lost in the United States. The loss of agricultural land is a serious issue in today's America. Understanding urban sprawl can better help us as a society become more conscious of its consequences. This research examines Miami-Dade County, Florida as a case study in urban sprawl and loss of agricultural land. It utilized the National Land Cover Database to display urban growth in the years 1985-2023. The proximity of the Everglades and key agricultural land was also considered during research as factors constricting urban growth in the county.

## Is Home Where the Heart is? College Basketball Success and Hometown Distance

Brock Olson

**Faculty Sponsor: Joel Helmer**

Success in college basketball can be measured in many different ways depending on the program. For some just making the tournament is considered a success whereas for others a chance at the national championship is the expectation. This study examines the proximity of recruits in terms of their university affects success. It also dives into different recruiting patterns that different coaches have throughout the years, before and after success. In this study, a range of long-tenured coaches are analyzed, from all different levels and all different parts of the country.

## Impact American Football Helmets have in preventing Brain Injuries

Aaron Everett

**Faculty Sponsor: Nolan Harms**

Brain injuries remain a significant concern in American football, particularly as the long-term effects of repeated head trauma become increasingly evident. Various studies have been done to determine the impact of helmet design and technology in mitigating such injuries. Emphasis for these adjustments is placed on common neurological conditions sustained during play, including mild traumatic brain injuries (MTBI's or Concussions) often leading to severe cases of chronic traumatic encephalopathy (CTE). Current helmet technologies such as the Riddell SpeedFlex, Schutt F7, AXON, and VISICS focus and demonstrate unique safety features in mechanical innovations, and general advancements in helmet design that are influencing player safety and shaping the future of the sport of football.

## Strength In Motion

Emma Womboldt-Siemek

**Faculty Sponsor: Nolan Harms**

Pregnancy is a time of heightened stress and anxiety, which can negatively impact maternal and fetal outcomes. This project explores how physical activity—such as walking, swimming, and prenatal yoga—reduces anxiety and improves mood during pregnancy. Supported by research and clinical guidelines, exercise is shown to regulate stress hormones, enhance self-efficacy, and promote emotional well-being. Regular physical activity is a safe, effective, and underutilized tool for improving prenatal mental health.

## Neuro-Bio-Electric Stimulator (NEUBIE): The Newest Leader in Neuroplasticity Therapy

Micah Henschen

**Faculty Sponsor: Nolan Harms**

Released in 2017, the Neuro-Bio-Electric Stimulator (NEUBIE) provides a modern approach to how recovery can be achieved in therapeutic settings. This new form of electrical stimulation is used to enhance neuroplasticity within affected areas. While dealing with injuries and pain, a patient's body will naturally guard the area from pain. However, the NEUBIE attempts to "tap into" those affected areas to promote a reopening in the affected pathways. This reopening process is being shown in new research to decrease the time patients spend in rehab as well as long-term success in injury prevention.

## Discovering the Frogs of Costa Rica

Katie Zoe Lavigne and Niah Kirchner

**Faculty Sponsor: Joe Gubanyi**

During our time in Costa Rica, we had the incredible opportunity to observe a wide variety of frog species in their natural rainforest habitats. We encountered vibrant black and green poison dart frogs, camouflaged glass frogs, the tiny but striking strawberry poison dart frogs, broad-headed leaf frog, and the red-eyed tree frog. Each species demonstrated unique adaptations in color, size, and behavior that reflected their specific environments and roles in them. These experiences deepened our appreciation for biodiversity and the importance of conservation efforts in tropical ecosystems.

## Modern Soccer Training: A New Era for Athletes

Martin Herrera

**Faculty Sponsor: Nolan Harms**

This project looks at how soccer training has changed over time and how modern athletes prepare differently today. In the past, players focused mostly on running and ball control. Now, training includes strength workouts, injury prevention, recovery plans, and even changes during events like the COVID-19 lockdown. Using academic sources, I explain how new training methods help players stay healthy and perform better on the field. The goal of this research is to show how important it is for soccer players to train smarter, not just harder. As a soccer player myself, this topic is important to me because I want to improve my own training and help others do the same.

## The Economic Impact of Legalized Sports Betting

Brittney Aitken

**Faculty Sponsor: Nolan Harms**

With the rapid spread of legalization of sports betting moving across the United States popularity has developed in this emerging industry which was caused by the easy access of online betting. In this research we will dive deeper into the Oxford Economics study that analyzes the potential economic impacts of legalized sports betting in the U.S. By examining this study, we could understand the high potential that legalized sports betting has on the economy such as job creation, income generation, economic circulation and tax revenue.

## Optimizing Vertical Jump Performance: A Comparison of Strength Training and Plyometrics

Tristan Smith

**Faculty Sponsor: Nolan Harms**

Strength training and plyometrics are widely used to improve vertical jump performance, a key skill in sports like basketball and volleyball. Strength training boosts force production through resistance exercises like squats. Plyometric exercises, such as pogo hops, emphasize explosive movements using the stretch-shortening cycle. Research shows strength training may offer greater long-term benefits by increasing power output and muscle activation, whereas plyometric exercises support short-term explosive gains. Understanding these differences aids in designing effective training programs.

# Poster Session D

**Monday April 28, 2025** **6:00-7:00p** **Dunklau Lobby**

## Holistic Medicine: A New Approach in Health and Human Performance

Riley Hoetfelker

**Faculty Sponsor: Nolan Harms**

Humans are complex, consistently proving themselves to be the most intricate organisms on earth. Ranging from emotions to physical features, the “person” is a dynamic system. This complexity has revolutionized how healthcare providers approach rehabilitation. Holistic medicine offers a multifaceted view for medical professionals. This care incorporates culture, background, and faith among others to treat a whole person rather than symptoms. This review of academic literature communicates the purpose and effectiveness of holistic medicine in the rehabilitation setting.

## Physical Activity and Mental Health

Ryleigh Flesner

**Faculty Sponsor: Nolan Harms**

Mental health and physical activity are increasingly prominent topics in current research. Numerous studies have explored the relationship between the two, examining how physical activity may influence mental well-being and vice versa. Previous literature provides a better understanding of the nature of this relationship, with a demonstrated positive correlation between the two topics. These findings have broad implications for public health as physical activity is becoming more accessible.

## An Analysis of Great Plains Athletic Conference Football Recruiting

Tanner Frahm

**Faculty Sponsor: Joel Helmer**

A GPAC football team has appeared in the NAIA National Championship football game nine times in the past fifteen years and has won five national championships between Morningside winning three and Northwestern College winning two. Therefore, it is important to examine the data of the recruiting of football players in the GPAC football conference. This project analyzes the mapped spatial data of where each GPAC football team recruits their players with the project goal of recognizing team trends in recruiting areas by extracting the data from the rosters of each conference team and mapping the data into an ArcGIS Online map.

## American Grey Wolf History: Reintroduction and Conservation Efforts

Naomi Archer

**Faculty Sponsor: Joel Helmer**

Today, only about 10% of the original historical range of wolves in North America are present. Dating back to the late 1800’s, wolf suppression began with habitat loss, hunting, and loss in prey options. People targeted wolves to ensure the safety of their livestock which led to their extinction in America. However, recently, conservation groups like the National Park Service have put efforts to restore wolf pack populations across the Americas, from the Rockies, Great Lakes, and plains of the South. The Endangered Species Act of 1973, officially led the way for wolf reintroduction conservation starting in Yellowstone, Wyoming and is still expanding to other suitable states today. This project tracks and demonstrates the recessions and growth of American wolf populations of today's reintroduction projects and compares it to the original population before their eradication in the 1800’s.

## Creatine Monohydrate: A Girl's Best Friend?

Greta Corneliusen

**Faculty Sponsor: Nolan Harms**

Creatine Monohydrate, recognized for its ergogenic benefits in performance, has historically only been studied in the male population. The interplay between the hormonal fluctuations in female physiology and creatine supplementation has recently become a topic of interest for researchers. Findings show the possibility for supplementation to support performance, cognitive function, and metabolic health in women, particularly during hormonally dynamic phases such as menstruation, pregnancy, and menopause. As a result, creatine is being increasingly recognized not only as a sports supplement but also as a supplement for healthy aging and female-specific physiological demands.

## The Effect of Stress and Anxiety on Performance

Lily Psencik

**Faculty Sponsor: Nolan Harms**

Stress and anxiety are natural responses to challenging situations but can significantly impact human performance across various domains, including athletics, academics, and workplace productivity. This study investigates how stress and anxiety influence cognitive, physical, and emotional performance. The findings suggest that while moderate stress can enhance focus and motivation, excessive stress and anxiety impair reaction time, decision-making, and endurance. This research explores physiological and psychological mechanisms underlying these effects and provides strategies for managing stress for optimal performance.

## The Geography of the United States Oil and Natural Gas Infrastructure

Ransom  Watts

**Faculty Sponsor: Joel Helmer**

In 2023, the United States produced on average, 12.9 million barrels of oil every day, exceeding the oil production of any other country. Both on land and sea, the landscape of our country is dotted with evidence of the Oil and Natural Gas Industry. This research shows the spatial distribution of many aspects of our country's oil infrastructure, including pipelines, wells, and refineries. Understanding spatially the Oil and Natural gas infrastructure of the United States helps to answer many of the questions regarding this important aspect of our country’s industrial and economic framework.

## Prevalence of ACL Tears in Females During Different Phases of their Menstrual Cycle

Kate Griess

**Faculty Sponsor: Nolan Harms**

Athletes push their bodies to the limit, but for female athletes, there’s another factor influencing their risk of injury—hormones. Over the years, research has suggested a strong connection between the menstrual cycle and the prevalence of anterior cruciate ligament (ACL) injuries.  These injuries tend to occur more frequently when their estrogen levels are peaked, particularly during the follicular and ovulatory phases of the menstrual cycle. The reason? Increased estrogen levels contribute to ligament laxity, making the knee more vulnerable to injury.

## 40+ Years of a Changing Cryosphere: Mapping the Movement of the Columbia and Meares Glaciers in Alaska

Elaina Hanson

**Faculty Sponsor: Joel Helmer**

Tidewater glaciers worldwide are retreating. This project utilizes LandSAT imagery to analyze and map the movement of the Meares and Columbia glaciers in Alaska. By examining satellite data from 1980 to 2024, it tracks changes in glacier size and retreat patterns. This research provides critical insights into the impacts of climate change on glacial dynamics and how glaciers move over time. The findings highlight the importance of remote sensing technology in monitoring environmental changes in remote and challenging terrains.

# Oral Session A1

**Monday April 28, 2025** **Dunklau 142**

## Why do or don't you go to church?

Emily Loseke 2:30-2:50p

**Faculty Sponsor: Gabriel Haley**

The research shows that the U.S. remains a religious nation, yet less than half of people regularly or formally worship. We often address this reality from a purely theological or statistical approach, but when was the last time we simply had a conversation with each other about our faith, including why we do or don't go to church? This is something I've been wrestling with for a while, so I've taken a person-focused approach to more effectively encourage rethinking. This approach utilizes anonymous survey responses as well as informal interviews to provide a glimpse into the human side of church, rather than just the statistics or theology.

## How Many is Too Many? A Christian approach to the effects of human population change over the last century

Ellie Jander 2:50-3:10p

**Faculty Sponsor: Gabriel Haley**

Between 1805 and 1900, the world's population grew from 1 billion to 1.7 billion. Over the next century, it surged to 6.1 billion, and by November 2022, reached 8 billion. The human population influences and is affected by social standards, government policies, agricultural production, and natural resource use and availability. The challenges of human population change remain unresolved. My project addresses those challenges through a Biblical lens, as it uniquely speaks to Christian's calling to love their neighbors. How can they respond in a Gospel-motivated way to conflicting messages about birth control and natural resource management? My project outlines the history of population change and related government policies. The current state of the issue is highlighted through maps and charts, information on agricultural production, and natural resources. It is important that Christians are equipped and prepared to respond to this multifaceted life issue in the ever-changing and increasingly polarized society.

## Exploring Future Educators' Opinions on Mental Health Education in the Classroom

Hope Nelson 3:10-3:30p

**Faculty Sponsor: Gabriel Haley**

Children's mental health is a significant topic for parents, educators, and mental health care providers alike, as the state of it determines a child's ability to live, learn, and succeed in vital pursuits. With the school being the place that most children spend the majority of their days, it follows that schools must have the capacity to address and understand common challenges to students' mental health. While previous research suggests current educators' perspectives on mental health education are shaped by their perceived levels of knowledge of the topics, expectations of its reception among external parties, and views on the role of schools in addressing students' mental health needs, little of it has explored the developing perspectives of pre-service teachers. This study examines the perceptions of mental health education in the classroom of pre-service teachers at a private Lutheran university in Nebraska who will serve K-8 populations using analysis of survey data. Thematic findings and possible applications will be discussed.

# Oral Session A2

**Monday April 28, 2025** **Dunklau 143**

## Roll On

Molly Reece 2:30-2:45p

**Faculty Sponsor: Brian Albright**

I am going to be presenting on a simulation designed to determine the best combination of dice to roll for DND. It looks specifically at three combinations that have a maximum possible roll of 18. I will be discussing the different results depending on what definition of the best combination is being used.

## "Hardy" Boys: An Evaluation and Interpretation of the Themes, Characters, and Authors of Gilded Age and Progressive Era Young Adult Fiction

Adah Pflughoeft 2:45-3:00p

**Faculty Sponsor: Jamie Hink**

During America's Gilded Age (c. 1870-1900) popular authors of young adult fiction William Taylor Adams, Horatio Alger, Jr., and Edward Stratemeyer crafted stories in which they presented moral lessons while also providing entertainment through tales of wild adventure, admirable heroes, and nonstop action. This new genre of young adult fiction outlived the Gilded Age, capturing the imagination of American youth beyond the turn of the century in the nation's Progressive Era. Novels from both the Gilded Age and Progressive Era placed great value on personal character and agency and the manifestation of these characteristics in proving maturity, seeking opportunity, and participating in America's national pursuits. Even as the fiction of both eras followed many parallel tracks, specific aspects of the stories diverged at the turn of the century. In an effort to keep pace with modernity, the authors shifted their approach to social class and ethnicity, integrated plot-level changes, and introduced new types of protagonists and antagonists. Adams, Alger, and Stratemeyer were people of their time, shaped by industrial-era America. In their writing, they embraced national trends such as Manifest Destiny and imperialism, presenting these concepts to the adolescent sector of American citizenry. Familiar with the interests of American youth, they delicately balanced fact and fiction while emphasizing personal character and good fortune in their dozens of young adult novels. As they simultaneously prescribed, described, lamented, and lauded the nation and the next generation, they sought to positively influence young Americans' perceptions of society and life.

## GDPTK Godot Procedural Tool Kit

Noah Leeper and Tytus Woodburn 3:00-3:15p

**Faculty Sponsor: Marcus Gubanyi**

The Godot Procedural Tool Kit is designed to speed up and help game developers incorporate Procedural Generation into their games. This tool kit has two main features: Planet Generation and infinite chunk loading generation. Both approaches create unique terrain that can be used in almost any game setting. There were no existing tools, without payment, for Godot Developers to incorporate procedural generation. This Tool Kit is designed from scratch, with guidance from other open-source projects, with the intent of providing all developers a starting point for Procedural Generation.

## Solar Panels in Education

Joshua Palacios 3:15-3:30p

**Faculty Sponsor: Brian Albright**

Modeling and collecting solar panel data in order to create a new lab for lower-level physics labs.

# Oral Session B1

**Monday April 28, 2025** **Dunklau 142**

## Determining the Effect of UV Light on the Foraging Route of Physarum polycephalum

Slade Leicht and MaKenzi Ross 3:40-3:55p

**Faculty Sponsor: Connie Callahan**

Physarum polycephalum is a unicellular, multinucleated protist that slowly traverses its environment foraging for food. It is influenced both by attractants and repellents and is capable of making decisions based on the quality of its environment. Because UV light is a known repellent of P. polycephalum, this study investigated how UV light influences its foraging behavior. P. polycephalum was presented with a shorter route to food which was exposed to UV light with a wavelength of 395 nm and a longer route which was protected from this UV exposure. Results indicated an increase in distance traveled when presented with a UV light obstacle. Additionally, increased UV exposure corresponded to a decreased number of trials in which P. polycephalum successfully colonized a food source. These findings indicate that UV light influences the taxis and survival decisions of P. polycephalum, which serve to further our understanding of the foraging behavior of this unique protist.

## Costa Rica - Earth's Terrarium

Jackson Lindburg 3:55-4:10p

**Faculty Sponsor: Kimberly Clark**

Costa Rica didn't always exist. This presentation is an exploration into what makes Costa Rica and its beginnings so intriguing from a geographer’s point of view. Beginning with its volcanic origins and ecosystem networks, the country’s natural history will be shared using an emphasis on drone technology. This presentation will consider how geography has shaped agriculture, tourism, and human settlement patterns in Costa Rica, clearly conveying how geography has shaped Costa Rican identity.

## Why Do We Empty Our Pockets for Lady Luck?

David Claridge 4:10-4:25p

**Faculty Sponsor: Sara Moore**

This study was aimed at assessing why individuals make the choice to participate in games of chance. This was an effort to fill a gap in the research of risk-taking behaviors. This assessment was guided by the question, do the variables of buy-in, payout, and chance of success affect the degree to which an individual is inclined to participate in a game of chance? To assess this, participants ages 19 and older were asked to complete a survey that was used to analyze the effects of buy-in, payout, and chance of success on the individual's choice to engage in chance games.

## What Role Does Reading for Pleasure Play in the Stress Levels of College Students

Molly Frenzen 4:25-4:40p

**Faculty Sponsor: Sara Moore**

This study determined what role reading for pleasure plays in the stress levels of college students at Concordia University, Nebraska (CUNE). The benefits of reading for pleasure was hypothesized to positively affect the stress levels of college students. The study used quantitative data to determine if the

hypothesis was accurate through a survey completed by CUNE students. Within the survey was a demographics section, the 10-item Measure of Reading Habit, and the Perceived Stress Scale.

# Oral Session B2

**Monday April 28, 2025** **Dunklau 143**

## African Folk Dance Hidden in the United States Today

Seanna Patterson 3:40-4:00p

**Faculty Sponsor: Gabriel Haley**

The North American Slave Trade brought more than ships of people to the continent. The people on the ships brought with them their culture, values, and beliefs. A prominent cultural element that found its footing in the United States was West African folk dance. From traditional presentations to breakdancing and the Charleston, the influence of this folk tradition runs deep, yet many do not know the history of their favorite dances. It is important to teach dancers the meaning behind the dances they perform so they can better understand the motivation behind dances that go beyond Eurocentric ideals, address racism both in the dance world and beyond, and promote cross-cultural understanding.

## Work Of His Hand

Meredith Boster 4:00-4:20p

**Faculty Sponsor: Gabriel Haley**

As adolescents grow, they go through the pubertal process. If girls are not educated on what is happening to them during this process, they are unable to effectively manage the hormones that are changing in their bodies every day. God designed humans intentionally, distinctly, and carefully. He has created processes in the human body for very specific reasons, and one of these processes is reproduction. In today's society, menstruation is perceived as something dirty or something that needs to be hidden, when it is a very intentional process that God has given to women. This gift needs to be understood through the lens that women were made good and are not dirty or mistakes. There are not enough resources for parents to be able to educate their children on the menstrual process through a Christian lens, and there are not enough resources for young girls to look at themselves with a Christian lens and understand what is happening to them. I have created a resource (The Work of His Hand) to help with this discrepancy, and this is what my presentation is about!

## Death in the American Civil War

Thomas Gorline 4:20-4:40p

**Faculty Sponsor: Gabriel Haley**

The American Civil War claimed up to 750,000 lives or three percent of the United States at that time. It was a scale of death that had not been seen in an American war to that point or since. This payment of blood for the sins of their forefathers brought into question the very fabric of American culture and required its people to sort out a satisfying solution. By reading the letters sent to and from the battlefields, the deeper thoughts of the people on the subject of death are brought to light. To understand the thoughts of Americans about the deaths of their fellow citizens is to begin to understand the consequences of the American Civil War.

# Oral Session C1

**Monday April 28, 2025** **Dunklau 142**

## Mental Health Challenges and the Affects on Athletic Performance

Colby Sugden 4:50-5:05p

**Faculty Sponsor: Sara Moore**

Mental health is a critical factor in athletic performance, yet its impact on collegiate athletes remains underexplored. This study examines the correlation between mental health challenges and athletic performance among collegiate athletes at CUNE. Mental health data were collected from in-season student-athletes across multiple sports teams using validated assessment tools. Participants' mental health scores were then linked to their athletic performance statistics from the two weeks preceding survey completion.

## Roulette Simulation

Matthew Weismann 5:05-5:20p

**Faculty Sponsor: Brian Albright**

This is a simulation of the game Roulette. It is a comparison between the American Roulette wheel and the European Roulette wheel. In this simulation, 2 common Roulette strategies are compared to determine if there is a winning strategy for either game.

## Random Choice: A Cube Selecting Simulation

Zachary Oxar 5:20-5:35p

**Faculty Sponsor: Brian Albright**

This project finds the probability of picking 60% of cubes that are one color and 40% of cubes that are another color when there are a total of 4 colors in the bag. The user can input how many cubes they want of each color. With that the user can also input the total amount of cubes in the bag. Two thousand trials are conducted to find the most accurate probability.

## Customer Queuing Model

Hugo Fuentes 5:35-5:50p

**Faculty Sponsor: Brian Albright**

I'm simulating customer queues at the restaurant to see how hiring an extra waiter or cashier would reduce waiting times and customer loss during busy hours. I will do this based on the money made that day, average cost per plate and actual data from my parents' restaurant.

# Oral Session D1

**Monday April 28, 2025** **Dunklau 142**

## Creatine Monohydrate: A Girl's Best Friend?

Greta Corneliusen 6:00-6:15p

**Faculty Sponsor: Nolan Harms**

Creatine Monohydrate, recognized for its ergogenic benefits in performance, has historically only been studied in the male population. The interplay between the hormonal fluctuations in female physiology and creatine supplementation has recently become a topic of interest for researchers. Findings show the possibility for supplementation to support performance, cognitive function, and metabolic health in women, particularly during hormonally dynamic phases such as menstruation, pregnancy, and menopause. As a result, creatine is being increasingly recognized not only as a sports supplement but also as a supplement for healthy aging and female-specific physiological demands.

## The Highway Intersection: A Simulation of a Theoretical Queuing Model

Travis Parsons 6:15-6:30p

**Faculty Sponsor: Brian Albright**

Have you ever waited in a line at an intersection for what seems like ages? Do you wish the person going straight would get out of the right-turn lane? If you answered yes to either of these questions, then buckle up and prepare for an introduction to a theoretical queuing model via a multi-model simulation of a highway intersection.

## How does Screen Time Affect Life Satisfaction Among College Students?

Karson Sherman 6:30-6:45p

**Faculty Sponsor: Sara Moore**

This study aims to address the problem of college students experiencing low life satisfaction due to high screen time at small colleges in the Midwest. This problem is important because college students are at heightened risk of high screen time, which can lower life satisfaction and affect their career adaptability, optimism, and hope. The central research question was: How does screen time affect life satisfaction among college students?

# Oral Session D2

**Monday April 28, 2025** **Dunklau 143**

## Home Economics in Today's World

Hannah Ethridge 6:00-6:20p

**Faculty Sponsor: Gabriel Haley**

Home economics has many names; I use it as the educational subject for human development, personal and family finance, food nutrition and wellness, and general application of math, science, and communication skills in everyday life. This is a base for daily decisions, though we usually leave it in the background. Students need properly taught home economics so they may make better life choices. If it isn't included in another course and the student's home life is unknown, how will they know what to do? I will provide resources to use for students' enrichment, both in and outside of a course.

## Revisiting Cureton: A Forgotten Solution to the Ignatian Problem

Aarin Dean 6:20-6:40p

**Faculty Sponsor: Gabriel Haley**

Following the text-critical canons that the shorter and harder readings are to be preferred, this project combines analyses of vocabulary and structure to argue for the linguistic viability of the theory that the three shorter letters of Ignatius of Antioch, as found in three Syriac manuscripts, are not abridgements of a longer corpus. Instead, these shorter letters likely represent an earlier form of the text of Ignatius and should be studied in isolation and in relation to other lines of transmission.