

# Symposium Schedule

Podium Session I	Room	Theme	Presenters provide a 10-minute PowerPoint slide program with 5-minute Q & A.	Facilitator
9:45 – 11:00	323 PAC	Political Science	Extremely Enhanced Interrogation: Human Rights Abuses Carried out by Americans in Iraq and Afghanistan after 9/11 - Benjamin Hampton	Xavier Royer
			Coptic Christian Persecution in Egypt since 2013 - Eric Garigan	
			How Bans on “Critical Race Theory” Can Damage Society – Makailah Kelley	
			Unraveling political ethics: The American Struggles with Distrust and Accuracy - Michae’la Keller	
9:45 – 11:00	324 PAC	Ecology and Wildlife	Distribution and Abundance of the Common Mudpuppy ( <i>Necturus maculosus</i> ) in the Des Moines River of Mahaska and Marion County Iowa - Alex Gann	Pete Eyheralde
			Effects of Glucose on Germination and Growth in <i>Phaseolus vulgaris</i> - Bernard P. Wiest	
			Effects of soil type and nutrient availability on native tallgrass prairie forb germination and growth - Abigail Wammock	
			Small Mammal Community Resilience to Disturbance by Fire in Oak Savanna Ecosystems - Ryan Swarts	
9:45 – 11:00	311 PAC	Biology	The Effects of Methamphetamine on Fish - Alexander Gutierrez	Janet Ewart
			The Effects of Vaping on College Athletes - Shiloh Cunningham	
			How Effective are Materials in Controlling Bacterial Buildup on Pillowcases? - Abby Wilson	
			<i>Staphylococcus Epidermidis</i> Vs. Hydrogen Peroxide - Cheyenne Barnett	
9:45 – 11:00	208 PAC	Exercise Science 1	Force Production in Athletes vs Non-athletes - Franklin Via	Glenn Steimling
			Effects of Concussions on Student Athletes - Breana Roberts	
			The Effect of Creatine on Mice Kidney Function – Harlan Plumber	
			Effects of Torque in College Bowlers’ Knees - Alexis Lake	
<b>Poster Session</b> 11:15 – 1:30	PAC Courts		As many students as possible. There is room for 120+ posters.	Jim North
Podium Session II	Room	Theme	Presenters provide a 10-minute PowerPoint slide program with 5-minute Q & A.	Facilitator
1:45 – 3:00	323 PAC	Kinesiology and Life Sciences	The Effects of Radium on mice - Toni Hansen	Pete Eyheralde or Janet Ewart
			Population demographics of turtle species ( <i>Chelydra serpentina</i> , <i>Chrysemys picta</i> ) in the William Penn campus pond - Elizabeth Hele	
			How Anxiety Reacts to Stimulants such as Nicotine and Caffeine - Paola Cruz	
			The Effect of Seasonal Depression on Academics in College Students - Tegan Simmons	
1:45 – 3:00	319 PAC	History	WWII in the Netherlands: Significant Events in the Process of Stripping Human Rights from Jewish People - Katja Bierman	Brooke Sherrard
			High on War: Nazi Drug Use and its Rippling Effects - Harrison Murray	
			Separation of Church and State: A Twentieth-Century Return to the Founding Ideal - Jeremiah Flewellen	
			A Playground for Political Agendas: How Athletes Use Sports to Address Social Injustices and Race Discrimination - Eric D. Hughes II	
1:45 – 3:00	324 PAC	Exercise Science 2	Correlation Between Hamstrings and Anterior Pelvic Tilt – Joshua Ogden	Mauricio Nunez
			The Effect of an Elevated Heel on Squat Biomechanics – Kiana lei Young	
			What Stretch Type Prepares an Athlete to Produce More Force? – Sara Branson	

# Psychology

## **1. Sustaining Self-Motivation and Self-worth as Student Athlete**

*Journie Augmon*

A harmful performance stressor in college sports is the athlete's mindset, and, in this study, student athletes will evaluate their self-esteem and the self-motivation they acquire throughout their playing season. This will help bring performance levels higher as well as help the coaches provide a positive climate that nurtures progress for their players. We will be surveying student athletes that were picked at random throughout their playing season. At the end of each month, we will provide hard copy surveys of the Rosenberg Self-Esteem Scale and a Self-Motivation Survey.

## **2. Does Music Affect Your Emotions?**

*Keterius Brooks*

Music is commonly believed to change emotions. In the current study, the researcher will use the song *Stan* by Eminem and the song *Happy* by Pharrell to manipulate college student participants' emotions. After the songs are played, participants will be surveyed to see if they feel happy or sad.

## **3. The Effects of Narcissism**

*Shelbee Clow*

There are many people in this world who are being affected by someone who is narcissistic, it is hard for these people to leave the situation and it can have a negative impact. Researchers are considering the effects people with narcissistic tendencies have on people after they leave their situation.

Questions will focus on allowing participants to report the effects that they recognize from this relationship that continue post-relationship. It will also allow an informant that the participant reports witnessed the relationship to provide additional insight on the continuing effect.

## **4. Mental Health of Students Affected by Athletics**

*Gabriella Evans*

The mental health of students is clearly affected by their commitment to their athletics. In my research, I will be focusing on how the mental health of student athletes are altered by their participation in athletics.

A questionnaire will be given to students at two different times throughout the year, once during their competitive season and once during their off-season. The sample of students will include students of all different years at the university and of all different athletic teams. The students will be informed of the study and will be required to give consent before they are able to participate. The questionnaire will include questions regarding their participation in athletics, their involvement in academics, and their experience with mental health.

## **5. Mental Health and Professional Athletes**

*Carol Faye*

Although it is well recognized that exercise is one of the most effective treatments for anxiety and depression, this does not mean that professional athletes are immune to these conditions. Professional athletes have tremendous mental and physical demands as part of their sport-related careers, which might put them at risk for mental health problems and risky behavior. The participants will be 50 professional athletes, whose ages range from 18 to 50, to carry out this study. They will complete questionnaires about their physical and mental health symptoms, in order to assess the potential relationship between the two different symptom types.

## **6. How Does Being a Student-Athlete Affect Mental Health?**

*LeeAnne Gruber*

Student-athlete mental health is often overlooked and does not get taken as seriously as it should. Student-athlete mental health compared to non-student athlete mental health could potentially be dramatically different due to a variation in lived experiences during college. In the current project, multiple surveys will be sent out to a participating group of first year college student athletes and non-student athletes. The categories of questions being asked on this survey will include mental health since starting college, levels of anxiety, levels of depression, hours of sleep at night and levels of stress.

## **7. How Does Athletic Environment Affect Mental Health in Student-Athletes?**

*Alyssa Hames*

The importance of mental health in athletes is crucial to the success of programs and student athletes' success. By understanding how certain environments help/hurt the mental health of student-athletes, we can maximize environments that work best for student-athletes and reduce the mental health issues poor environments create. To find what environments are best for student-athletes, the researchers will take randomized groups of 15 student-athletes (same gender groups) and place them in different environments for a month. These environments include encouraging/disciplined, discouraging/disciplined, encouraging/undisciplined, and discouraging/undisciplined. Participants will take a mental health questionnaire before the month in their environment and after the month in their environment.

## **8. Narcissism and Lack of Empathy in Serial Killers**

*Jayden Lewerke*

Serial killers are the focus of much interest in the United States due to the high-profile crimes they commit. However, what characteristics are unique to serial killers remains a matter of debate. In the current study, researchers will survey serial killers from around the United States and survey United States citizens who have no criminal records. The surveys will focus on comparing demographic, empathy, and narcissism among serial killers, and to identify if this is significantly different from non-criminal United States citizens.

## **9. Characteristics of Serial Killers and Its Relation to Mental Illness Symptoms**

*Jade Melton*

How common are stereotypical serial killer characteristics? In my research, we will study participants with the similar mental characteristics/brains of a serial killer and those who also may have similar trauma as well. To do this we will complete brain imaging of non-serial killer participants and provide participants surveys to discover to what extent they report experiences that are as similar to the "serial killers stereotype". The stereotype of serial killer is often overexaggerated in the media causing confusion on what the realistic characteristics of a serial killer and mental illness really are. After the examination of our participants, we will compare them to known data and theories on what identifies serial killers to investigate how unique these characteristics are to the serial killer population.

## **10. Effects of Parenting Styles on Rates of Mental Illness in Adolescents**

*Elizabeth Park*

The current work will focus on investigating the potential correlation between different parenting styles and the rate of mental illnesses, specifically depression, anxiety, and PTSD, diagnosed in adolescents.

In the study, the researchers will be studying a parent's style of communicating and reacting towards their adolescent. The parents and the adolescents will be completing their own questionnaires, the parents will have one to complete and the adolescents will have three to complete. The questionnaire for the parents will ask them to rate how they react while communicating with their child in different situations and the adolescents' will ask them a variety of questions ranging from if they have stressful experiences in their past to how often they feel on edge.

### **11. The Experience of Gun Violence Exposure**

*Anna Rios*

In the world today, there is a huge incline of gun violence in school systems, high crime rate towns and everyday life. Gathering studies and research over the correlation between gun violence and PTSD is beneficial and crucial due to the increase. This research allows the researchers to gain knowledge on the symptoms of PTSD and how individuals involved can cope. Investigating both males and females who have been exposed to gun violence at any age through interviews and surveys. Gathering personal information through interviews, researchers will ask about the individuals' experience with gun violence and how they perceive that experience has influenced their lives.

### **12. Childhood Trauma and Mental Illness in Relation to Adult Deviant Behavior**

*Haylee Schwark*

Psychologists for years have found that there are connections between individuals who have been surrounded by criminal behavior in their childhood, have trauma from events in childhood, and have previous mental health issues and their involvement in criminal acts as a juvenile and into adulthood. In this study, the 100 participants, separated by one group being currently incarcerated and one not, but all having a juvenile record, will be from the federal prison system. The survey will include questions surrounding things such as basic demographics, mental illness, juvenile intervention services, and childhood experiences/surroundings. The study will be conducted with the main purpose of finding out if there is a connection between certain mental illness diagnosis and childhood experiences that could have caused trauma and criminal behavior involvement, as well as seeing if juvenile resources can be deemed helpful for troubled children.

### **13. Burnout in College Students and the Effects**

*Carly Still*

The current study would investigate the pressures college students face while attending university. These pressures can cause mental and physical burnout. Seeing and understanding those pressures will help these students find ways to prevent burnout in themselves and spot burnout in others.

The participants will be students between the ages of seventeen and twenty-five currently attending a university. In order to collect data, the students will be given a demographic questionnaire before they begin to see how they identify, a lifestyle questionnaire to gauge how they balance school and their social life, a burnout survey to see if the individual feels as if they are burnt out, and the Maslach Burnout Inventory (MBI) to measure the severity of the individual's burnout.

### **Effects of ADHD and Rejection Sensitive Dysphoria in Intimate Relationships**

*Aniyah Thomas*

What effects do people living with ADHD, particularly when linked with Rejection Sensitive Dysphoria, face in developing intimate relationships? The purpose of the study is to examine individuals living with both disorders and compare their experiences or views towards intimacy to other individuals that do not have either of the disorders. Clients that attend regular therapy for ADHD or RSD will be recruited through advertisements to

various therapy offices. They will be given the opportunity to complete an intimacy assessment, which will be analyzed for themes in order to assess differences experienced by those with ADHD and/or Rejection Sensitivity Dysphoria.

#### **14. Childhood Trauma Influences Dissociative Amnesia and/or Depersonalization in Early Female Adulthood**

*Destiny Tom*

When traumatic experiences occur, a person's mind can go into defense mode leading some individuals to operate a bit differently after that traumatic experience than the person without that trauma would. This research will examine female college students in which they have developed dissociative amnesia, and depersonalization disorder throughout their life due to childhood trauma. We will then investigate when trauma occurs in a childhood stage, the mind is not well at recognizing the event and suppresses it for later time such as adulthood. These childhood trauma experience may include child sexual assault, physical abuse, and/or maltreatment from parent(s).

#### **15. The Correlation of Isolation and Suicidality in LGBTQIA+ Adolescents**

*Peyton Van Blaricom*

The purpose of this study is to investigate the correlation between isolation of LGBTQIA+ adolescents and suicidal thoughts. This will build a better understanding of the high suicide rate in LGBTQIA+ adolescents. The participants will be adolescents from the ages ten to nineteen gathered from high schools, counseling centers, and the homeless community. In order to gather the data for this study, the participants will be given a demographic questionnaire being how they identify, a suicidal ideation questionnaire to assess the severity of suicidal ideation, a depression screening to assess levels of depression, and an isolation questionnaire to measure the severity of isolation. Once the data is gathered then it will be compared to assess the correlation of isolation and suicidality in LGBTQIA+ adolescents.

## **Applied Computer Science**

#### **16. Machine Learning in the Stock Market**

*Trevor Dooley*

This research study aimed to train a machine learning algorithm to project stock market prices. The study employed a dataset of historical stock market data from various sources, including financial news, company financial statements, and market indices. The machine learning algorithm was trained using supervised learning techniques, and its performance was evaluated using standard metrics such as mean squared error and R-squared. The study also explored the impact of various features on the algorithm's performance, including the use of technical indicators, sentiment analysis of news articles, and company-specific financial data.

# Sport Management

## **17. The Growth of Women Participation in College Sports**

*Bailee Royal*

It is human nature to be curious. Much has been recorded about male participation however, not the same has gone for women in sports. The opportunity has expanded however the knowledge and study hasn't been as in depth as male sports. This paper will examine the following statistics to see if a relationship exists between these factors:

- a. The teams per institutions in college for female and male athletes.
- b. The participation numbers between female and male college athletes.
- c. The athletic aid between female and male college athletes.

## **18. Comparison of key statistics among top Divisions in the NFL**

*Z. Franklin-Villanueva*

The NFL was founded in 1920 with ten teams from four states. Many teams failed over the years and only two founding members, the Chicago Bears and Arizona Cardinals survive today. The first championship game was played in 1967 as the AFL-NFL World Championship game. Today it is known as the Super Bowl and is on version 58.

Today the NFL has 32 teams; split into two conferences and four divisions AFC & NFC, North, South, East & West. Every year teams play the other three divisional rivals home and away, then the top teams are matched across divisions.

Fans want to know:

- a. Which division's teams score more points?
- b. Which division's teams allow more points?
- c. Which division's teams have the best third down conversion rate?

## **19. Points per game vs games won in the NFL**

*Zachary Jackson*

The NFL is the professional American football league. Football is the most popular sport in America and is one of the 4 major sports played in the United States. Being the highest source of the most revenue out of the four sports. The official name of the NFL was given in 1922. It was first known as the APFA. The APFA was first formed on September 17, 1920. With the inaugural season following it right after the decision was made for the league. This name change was brought from a meeting that was held in Canton, Ohio. Representative of numerous groups came together to decide the fate of it.

The groups that are considered the founder of the NFL are Akron Pros, Canton Bulldogs, Cleveland Indians, and Dayton Triangles. The league now consists of 32 teams that are divided into the divisions the NFC and the AFC.

## **20. X-Factor in a Golf Swing**

*Steven Skewes*

The sport of golf is said to have originated on the Eastern coast of Scotland near the capital of Edinburgh during the 15th century. It has now become a popular sport throughout the world.

The golf swing is a chain movement, and a longer swing has been shown to increase driving distance. As golf courses have gotten longer, driving distance is a key factor for success in golf. The X-factor is the motion of a golf swing. This paper will examine the X-factor:

- a. Do golfers with a greater ROM have a better swing?

- b. Is there a relationship between clubhead speed and the X-factor?
- c. Would there be a difference between male and female golfers for X-factor?

## **21. Comparing the Premier League and La Liga for goals scored**

*Shakore Simon*

Football is arguably the most popular sport in the World, and with the Premier League (EPL) and Spanish Premier League (La Liga) being the top best league, conversations have come about frequently to discuss which is the most competitive league. Although some of the teams in both leagues may compete in other domestic competitions during their seasons, this paper will examine the following EPL and La Liga 2021-2022 regular season statistics to see if a difference exists between these factors:

- a. Which league scores the most goals?
- b. Which league has a better goal difference?
- c. Which league holds more time in possession?

## **22. QB efficiency and success in the 2022-23 NFL regular season**

*McGwire Bottorff*

The QB position in the NFL is unique as they have arguably the greatest impact on wins and team success. If your QB is high quality it is much more likely to lead to success as a team and winning a lot of games. The more efficient the QB is the better chance you are going to win. Top QBs typically pass for a lot of yardage and TDs because they are accurate and have top receivers on their team. This led to increased scoring and decreased turnovers, additional factors that lead to winning more games.

The great franchises have always had strong QB play as they determine play calls, audibles, and where to deliver the ball on passing plays. The best QBs should lead to more regular season wins and hopefully a Super Bowl victory.

## **23. Offensive Statistics of Men's Soccer**

*M. Baldomero*

Soccer the most popular sport globally, and every year 32 countries compete for the right to win the World Cup. At a basic level it comes down to simply winning games; score more goals than the other team. This paper will examine the following USA regular season statistics of the last 10 years to see if a relationship exists between these factors:

- a. There will be no difference between Men's winning percentage among USA soccer during the last 10 years.
- b. There will be no difference between Men's goals for among USA soccer during the last 10 years.
- c. There will be no difference between Men's goals against among USA soccer during the last 10 years

## **24. Optimal Bowling Performance Methods**

*Madison Ross*

Bowling is a sport that has been around since the beginning of time. The sport has grown from using rocks and wood to changing the dimension of pins, bowling ball core and cover stocks as well as lane conditions with different oil patterns and difficulties. Every year bowlers compete for their own claim to fame while competing in PBA tournaments to receive trophies. This paper will examine the following PBA bowling styles in the 2022 seasons statistics to see if a relationship exists between these factors:

- a. Do right- or left-handed bowlers have a higher average?
- b. Do one- or two-handed bowlers have a higher average?
- c. Does spare percentage affect tournament qualifying?

## **25. NBA Scoring and 3 Point Shooting**

*Kapilan Sachchithananthan*

Basketball is a sport that is known all over the world and is heavily influenced by the NBA. The NBA is arguable the best professional league in the world, as such has come a long way in providing basketball entertainment to the world over the years. A major factor to this form of entertainment is scoring. Over the past 20 years the NBA has seen a major shift in scoring due to changes in rules, player skill and coaching strategies. Not only do the best American players compete in the NBA, but the league now includes the best players in the world.

- a. In this paper, we will examine scoring to see if there is a relationship between these factors:  
NBA's Scoring in the years 2001, 2011, and 2021
- b. 3-Point Percentage in the years 2001, 2011, and 2021

## **26. Pelvic Tilt, BMI, and Back Pain**

*Jessica Skewes*

The spine is a major structural component of the human body. Because of its centrality, the spine is crucial for stability and flexibility in everyday movements. Unfortunately, on the flip side, it makes it very easy for things to go wrong and that can lead to pain. In today's day and age, eight in ten Americans experience back pain. Amongst other things, pelvic tilt and high BMIs have both been deemed as possible contributors of back pain. The purpose of this study is to compare the two to determine if pelvic tilt or BMI is a more statistically significant contributor to back pain amongst a specific group of people.

## **27. Does offense overrule defense in today's NBA?**

*James Pennington II*

What is the recipe for winning the most games in an NBA 82 game season? Does scoring the most points in a season put you in a better chance of having the number 1 seed? Having great offensive shooting seasons lead to best records? With the resources and data, we will find out if the team who scores the most points, has the best EFG%, or the best 3pt shooting team leads to more wins in the 2021-2022 season. At a basic level it comes down to simply winning games; score more points than a team allows. This paper will examine the following NBA regular season statistics to see if a relationship exists between these factors:

- a. Do teams that score more points win more games?
- b. Do teams that shoot the best EFG% win more games?
- c. Do teams that shoot the best 3pt% win more games?

## **28. Winning Games in Major League Baseball**

*Brian K. Thomas*

As fans who love watching the game and as coaches who are trying to lead their teams to championships, we are curious to know whether it be offense or defense that wins the most games. The best way to look at this would be to look at whether a lower ERA, a higher Batting Average or a higher Fielding Percentage leads to winning the most games. To make the best analysis, we will look at the highest form of competition baseball in the most recent years which would be the MLB season of 2022. This will help get a better understanding on to what one of these three factors (or all) plays a role in winning baseball games.

- a. Does a Higher BA result in Higher Win %?
- b. Does a Lower ERA result in Higher Win %?
- c. Does a Higher Field % result in Higher Win %?



## **29. The Statcast era and how it has affected today's hitters**

*A. Clayton Spratt*

When looking at the state of Baseball nowadays compared to 10 years ago, we can have clearly seen a difference in how players have changed their approach at the plate, on the bases, and on the mound. It's no secret that the game has changed dramatically over the course of a couple decades, and we can attribute this to the new technology that we are being brought to. The factors tested include:

- a. Did select top teams in 2015 have a higher batting average than 2022?
- b. Did select top teams in 2015 have a higher slugging percentage than 2022?
- c. Did select top teams in 2015 have a higher strikeout percentage than 2022?

# **Biology**

## **30. The Effects of Methamphetamine on Fish**

*Alexander Gutierrez*

Methamphetamine or speed in the case of my research is a highly addictive central nervous system stimulant. Speed is legal within the U.S by prescription only due to its highly addictive nature as well as potency. The main uses of speed within the U.S are to reduce the effects of attention hyperactivity disorder (ADHD), as well as treatment for obesity although not commonly used anymore. For the purposes of my research, I used speed to study the behavioral effects on goldfish and beta fish. The main purpose of my research was to test the addictiveness of speed, the effects on the brain, as well as changes in growth or eating habits. My theory is that if speed is introduced into the fishes (Beta and Gold) environment then they will move more sporadically, as well as have a decreased appetite.

## **31. Distribution and Abundance of the Common Mudpuppy (*Necturus maculosus*) in the Des Moines River of Mahaska and Marion County Iowa**

*Alex Gann*

The common mudpuppy (*Necturus maculosus*) is a state threatened species in Iowa. This fully aquatic salamander is easily overlooked, as it spends all of its time underwater in deep rivers. It's Iowa's largest salamander, with some individuals reaching lengths of 17 inches. Unlike most of Iowa's amphibians, mudpuppies are most active during the winter in water temperatures of 3 – 6 °C (Chellman et al. 2017).

Currently the common mudpuppy is known to occur in Iowa in the Mississippi River, the Cedar River, the southeast section of the Skunk River, the North Raccoon River, and the upper reaches of the Des Moines River (Fig. 1).

Efforts are underway by the Iowa DNR to assess mudpuppy populations on the upper Mississippi River (Hanson and Fredrickson, 2022). Our study was conducted to determine the distribution of mudpuppies in the Des Moines River of south-central Iowa.

In this study we address the following hypothesis:

Capture rate for common mudpuppies in the Des Moines River between Red Rock Lake and Eddyville Iowa will be similar to that found on the upper Mississippi River (0.29 mudpuppy captures per trap night).

## **32. The Effects of Vaping on College Athletes**

*Shiloh Cunningham*

In 2003 e-cigarettes were invented as a healthier alternative to conventional smoking, since 2014 they have been the most used tobacco product among the youth in the United States. Unfortunately, these e-cigarettes have

impaired many young athletes' careers and have stunted them from living up to their full potential. Regular cigarettes are known for long term effects on the lungs and having the potential of harming others around them. E-cigarette's may not have the ability to cause secondhand smoking on others, but they have the potential to do more damage to other parts of the body other than the lungs. In past studies athletes who have greater addiction to nicotine are seen to have more shortness of breath than those who don't vape. On top of shortness of breath, they have also found heart problems, cardiac, and lung disease. Although these studies were informational, they were evaluated by personally observing the behavior of athletes, this examines the relationship between vaping and a student's cardiac response when exercising. I aim to assess the level of cardiac function on athletes that vape and those that don't, to accurately evaluate if vaping really effects the cardiac performance of an athlete.

### **33. How Effective are Materials in Controlling Bacterial Buildup on Pillowcases?**

*Abby Wilson*

Bacteria grow everywhere, even in the pillowcases we sleep on. *Propionibacterium acnes* species inhabit pillowcases and contribute to acne vulgaris. *P. acnes* exists as normal flora throughout the body, including the skin. In excess, *P. acnes* contributes to inflammation in the skin condition, acne vulgaris [6]. The role of *P. acnes* in the development of acne has been studied for over 100 years [1]. Unfortunately, the inevitable problem of antibiotic-resistant strains has begun to rise as of the past 25 years.

The importance of regular washing of pillowcases is imperative in the desire to control acne flare ups and bacterial build up. A study examining bacterial diversity within the home observed pillowcase diversity to harbor human skin, mouth, and stool bacteria [2]. Regularity in pillowcase washing is important to diminish high amounts of colony-forming units (CFUs). Another variable in the reduction of CFUs is the material of the pillowcase. Antimicrobial pillowcases are a novel material to control and possibly inhibit inflammation and infections [8]. Knowledge of the pillowcase material with the highest antimicrobial power while maintaining a personalized level of comfort can aid in prevention of acne due to presence of bacterial colonies.

A previous study focused on the role of *P. acnes* infections within healthcare settings [4]. While this study was valuable in prevention of infections in a hospital setting, the present paper examines general bacteria presence on household pillowcases over a span of seven days. Another study's focus was on the presence of the bacteria *P. acnes* within scalp pimples [9]. While this study was valuable, the present paper observes facial skin flora and bacterial diversity on different pillowcase materials.

The present research explores bacterial colony growth on different pillowcase materials cultured after washing, one night, and six nights after sleeping. Use of a pillowcase material tailored to antibacterial growth will have the least bacterial growth over the period of 6 nights.

### **34. Staphylococcus Epidermidis Vs. Hydrogen Peroxide**

*Cheyenne Barnett*

*Staphylococcus epidermidis* (Staph) is a common symbiont bacterium that can become infectious once inside the human host. They are among the most common causes of nosocomial infections in the United States and can lead to serious complications. Staph germs are spread through skin-to-skin contact. In hospitals a lot of doctors and healthcare workers use alcohol-based gels to eliminate the germ. Why don't we use hydrogen peroxide instead of alcohol-based chemicals? Hydrogen peroxide is strong enough to be used as a disinfectant.

My objective is to study how hydrogen peroxide affects the bacteria using cultures of *Staphylococcus epidermidis* grown as lawns on agar in a petri dish. Will hydrogen peroxide kill/stop the growth of Staph? This could be beneficial to in the healthcare setting. It would help eliminate the transfer of Staph to and from people. Especially, during surgeries where a lot of cross-contamination can happen.

### 35. Effects of Glucose on Germination and Growth in *Phaseolus vulgaris*

Bernard P. Wiest

Green beans represent a valuable source of vitamins and minerals. Their rapid growth makes them an ideal part of the American diet. This is crucial when considering food production for the Americans society. Plants need water, soil, and sunlight to survive. There are many metabolic pathways involved in the growth and development in the plant. These include photosynthesis, gluconeogenesis, and the phosphorus uptake and utilization. Photosynthesis a process in which the plant uses sunlight, water, and carbon dioxide to release oxygen, and synthesizes sugar and ATP, forms the basis of a complex food web. Plants capture chemical energy from sunlight, herbivores obtain energy by eating plants, and carnivores obtain it by eating the herbivores. (Photosynthesis, n.d.).



Phosphorus is a vital component of ATP within the plant. ATP forms during photosynthesis and is used in the process of seedling growth and development. It is found in water, soil and sediments (The phosphorus cycle, n.d.). There are many specific growth factors in plants that are associated with phosphorus. Some factors stimulate root development, increase stalk and stem strength, and increase resistance to plant diseases. (Phosphorus - nutrient management, n.d.).

### 36. Effects of soil type and nutrient availability on native tallgrass prairie forb germination and growth

Abigail Wammock

All plants require nutrients for successful growth. Specifically, plants require various macronutrients and micronutrients that soil provides for them. Essential macronutrients include nitrogen, phosphorus, potassium, sulfur and magnesium ([www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)). Nitrogen helps foliage grow strong and affects a plant's leaf development. Phosphorus assists with the growth of roots and helps plants survive harsh climates and environmental stressors. Potassium assists plants in retaining water and helps resist disease and insect predators. Like all organisms, plants compete for resources (Gause, 1934), including nutrients, light, water, space, and pollinators. Competition can occur both above and belowground. We conducted tests to observe growth of tallgrass prairie forbs, *Amorpha canescens* (leadplant) and *Dalea purpurea* (purple prairie clover) (Fig. 1) in response to soil nutrient availability in three different soil types: commercial potting soil, row crop agricultural field soil, and remnant sand prairie soil. We also measured the effects of interspecific competition on seedling growth. In this study we address the following hypotheses:

- *A. canescens* and *D. purpurea* will have greater growth when planted separately than in competition with one another.
- Commercial potting soil will contain greater amounts of nutrients than row crop or sand prairie soil, resulting in an increased rate of plant growth.

### 37. Small Mammal Community Resilience to Disturbance by Fire in Oak Savanna Ecosystems

Ryan Swarts

Oak savanna ecosystems were once plentiful in the Midwest covering over 50 million acres. Now only 0.02% of that original ecosystem remains, making oak savanna one the most endangered habitats on the planet (Nuzzo, 1986).

Fire is a common land management tool used currently to maintain savanna ecosystems and to eradicate invasive vegetation. Controlled burns in restoration areas may impact members of the small mammal community differently. Deer mice (*Peromyscus*) are known to be more resilient to habitat disturbances (Clark & Kaufman, 1990). A study of small mammal response to oak savanna restoration in Indiana found that deer mouse and fox squirrel (*Sciurus niger*) populations increased following prescribed fire while southern flying squirrels (*Glaucomys volans*), meadow voles (*Microtus pennsylvanicus*), and short-tailed shrew (*Blarina brevicauda*) numbers decreased dramatically (Clarkston, 2011).

The purpose of our study was to determine the effects of controlled fire on the population dynamics of Iowa small mammal communities in oak savanna ecosystems.

We hypothesize that the reduction in structural diversity and available cover immediately following a controlled fire will result in decreased abundance and diversity of small mammal species in the burned areas. We further hypothesize that small mammal species detected in the post fire habitat will likely consist of only *Peromyscus maniculatus*, a rodent species known to be disturbance tolerant.

### **38. Force Production in Athletes vs Non-athletes**

*Franklin Via*

There are 5 basic movements that we as humans can do: walk, jump, hinge, overhead press, and squat. Two of the most vital movements to all humans is the ability to squat and to be able to jump. Within athletics, the ability to create maximum force is measured through testing the max height created from a squat jump. The experiment hopes to compare the forces created by athletes and non-athletes to see how large the gap is.

### **39. Effects of Concussions on Students Athletes**

*Breana Roberts*

Concussions in sports are serious because of the lifelong effects they may have on the brain. These effects can lead to emotional and physical penalties, negative cognitive behavior and/or even death. (Hall 2017). When we hit our head or anywhere else on the body which can transmit a force to the head, a mild traumatic brain injury may occur, and this is known as a concussion. (Amenabar 2022). There are a lot of symptoms associated with having a concussion including; nausea, depression, moodiness, disturbed sleep, vomiting, headache and confusion. The symptoms of a concussion may disappear, but the brain may still not function at a hundred percent. Following high quality concussion recovery protocols minimize the risk of sustaining another concussion. If an athlete suffers from another concussion by returning to their sport too quickly, they are at an extremely high risk of serious brain damage. Significant problems arise due to abnormal brain wave activity after a concussion and motor pathways can partially degenerate. Recent studies compared healthy athletes to those who had previously had a concussion, showed that they may still be affected and if the concussion is too severe it may permanently damage the brain. Severe head trauma shows similar symptoms of early Parkinson's disease (Nordqvist 2015). There are protocols that should be followed in order to return to play without making the risk of suffering from another concussion. It is advised that an athlete who has suffered from a concussion should avoid stimuli and rest. This allows the body to reduce stress from mentally exhausting activities and allows for the brain to properly recuperate. Although it may be difficult to closely monitor the affliction that a concussion may cause and the cognitive activities during a concussion period, concussion protocol chosen is vital for the athlete's return to play and academic success.

### **40. How Anxiety Reacts to Stimulants such as Nicotine and Caffeine**

*Paola Cruz*

Anxiety in college students has been an ongoing factor for many years, and it can interact with daily life. Anxiety is the feeling of tension, being afraid or worried about things that are bound to happen, will happen, or we think and imagine that it could happen. Anxiety disorders include generalized anxiety symptoms, panic disorder, social anxiety disorder, and phobia-related disorder. According to World Health Organization, 3.6% of individuals suffer or have an anxiety disorder, with social anxiety disorders being more common in adolescents from age 13-14 (31.4%), age 15-16 (32.1%), and age 17-18 (32.3%). Social anxiety disorders are most common in White Americans, African Americans, Asian Americans, and Hispanic Americans.

Stimulants are drugs that speed up messages travelling from the brain and body, and can cause over-stimulation, which can lead to anxiety, panic, seizures, headaches, stomach cramps and paranoia. Consuming stimulants while

having an anxiety disorder will make it harder to control the symptoms, making it harder for the person to control the way anxiety treats them. Over 16 million Americans used stimulants in a year, with 4.5% using prescription stimulants and 2.1% misusing at least once. Coffee is a stimulant which can trigger the anxiety a person is feeling by lack of sleep, and nicotine is an antidepressant as well as a stimulant and can cause temporary relief from anxiety, but these would also be compromising a person's physical health. We conducted this research in order to answer what happens when college athletes consume stimulants and how that would play factor on anxiety.

In this study we address the following hypotheses:

1. Caffeine consumers felt more anxiety than nicotine users.
2. Nicotine users could show a small percent of symptoms.

#### **41. Population demographics of turtle species (*Chelydra serpentina*, *Chrysemys picta*) in the William Penn campus pond**

*Elizabeth Hele*

Common snapping turtles (*Chelydra serpentina*) and northern painted turtles (*Chrysemys picta*) occur statewide across Iowa and in nearly all types of freshwater habitats east of the Rocky Mountains (Buhlmann et al. 2008; Ernst & Lovich 2009). However, little is known about the population demographics of turtles in the William Penn University campus pond, constructed in 2006, on the north side of Oskaloosa Iowa.

It is important to know what species live in an area to assess the health of an ecosystem.

Turtles play an important role in freshwater habitats as both predators and scavengers. Snapping turtles specifically, eat dead and decaying animals, which improves the quality of water. We conducted a mark-recapture study of turtles in the William Penn campus pond, during August - October 2022, to assess turtle population size, as well as age and sex demographics.

Based on previous studies (Johnston et. al, 2012) we hypothesize that the 0.85-ha pond on the William Penn campus would have a population density of 2.3 turtles, with an adult sex ratio of 1:1.

#### **42. The Effects of Radium on mice**

*Toni Hansen*

Radiation has a stigma around it about being bad for you, but most people don't truly know what different types of radiation do to your body and that everyday things contain radiation. Radium is the substance I used; it can have unfortunate effects.

This research was conducted to find if the mice are radiated for two months switching off every couple of days the radiated mice will have larger livers and hearts.

#### **43. The Effect of Creatine on Mice Kidney Function**

*Harlan Plumber*

Creatine is an amino acid derivative located in the body's muscles and the brain. In the human, the pancreas and kidney produce creatine every day. Past research has shown that creatine can help rebuild and improve muscle endurance. What is the significant amount of stress that the kidney goes through to filter the extra creatine ingested on a daily basis? Are the benefits of creatine worth the possibility of kidney disease as well as other problems that progress through life? This study shows that increased creatine uptake resulted in decreased kidney function measured by a blood urine nitrogen assay (BUN).

# Business Administration

## **44. Visa**

*Jensen Evans*

Visa is a global digital payment technology company that serves individual and commercial clients, financial institutions, government entities, and merchants. Visa utilizes global e-commerce through digital payments.

## **45. Walt Disney Company**

*Jenna Donlan*

Walt Disney created a cartoon called “Alice Comedies” which distributed on October 16th, 1923, which became the start of Disney. The company was originally named Disney Brothers Cartoon Studio, but later changed to Walt Disney Studio. In 1928, Mikey Mouse was born, which became one of the most recognizable cartoons in history. In the decades following, Disney produced dozens of popular films and has become a media empire.

## **46. Dollar General**

*Jarrett DeKoning*

Dollar General is a domestic low-cost retail chain that focuses on selling everyday use items.

At Dollar General, our actions are guided by a simple mission: Serving Others. For our customers, this means placing the at the center of all we do, working every day to deliver value and convenience through our more than 18,000 neighborhood general stores. For our employees, this means respect and opportunity to grow and develop their careers, and for our communities, this means helping support the communities we call home.

## **47. Nike, Inc.**

*Michael (Sheaden) Cox*

Founded on January 25, 1964, Nike was originally under the name Blue Ribbon Sports. Founded by Bill Bowerman and Phil Knight, Nike has become an American multinational corporation primarily focusing on the design, development, manufacturing, and sales of athletic footwear. Nike’s first products were running shoes from Japan, which Bowerman and Knight sold out of the trunk of their cars at track meets. Eventually, in 1971, they decided to rebrand the company as Nike, after the Greek goddess of victory. During the 70s, running became more popular which in turn helped Nike expand. During this time Nike began expanding into other sports which led to them signing a deal with young Michael Jordan in 1984. The signing of Michael Jordan helped elevate the company’s brand to new heights. In the 1990s, Nike continued its expansion entering new product markets through soccer and golf. Around this time Nike started facing backlash for its labor practices overseas. Heading into the 2000s, Nike focused on building its digital presence, creating innovative products like Nike ID, and launching its first online store. Nike has continued partnering with top athletes and teams such as LeBron James, Tiger Woods, and the Brazilian national soccer team. Today Nike is one of the largest and most recognizable brands in the world sold in more than 190 countries and employs more than 75,000 people worldwide. Nike’s headquarters are in Beaverton, Oregon.

## **48. Netflix**

*Matteo Cerada*

Netflix is an American media-services provider that was founded in 1997 by Reed Hastings and Marc Randolph. Initially offering DVD-by-mail rental services, Netflix has since evolved into a global streaming giant. After the

success of their DVD-by-mail business, Netflix launched their streaming service in 2007, allowing users to watch TV shows and movies on their computers, tablets, and other internet-connected devices. The streaming platform has since grown in size and scope, offering a vast selection of original content and licensed programming from around the world. Netflix now has over 200 million subscribers in over 190 countries, and is one of the most successful streaming services in the world.

#### **49. PepsiCo, Inc. (PEP)**

*Jayqwon Bridges*

PepsiCo, Inc. is a multination corporation that operates in the food and beverage industry. Our mission is to create more smiles with every sip and every bite. By creating joyful moments through our delicious and nourishing products and unique brand experiences. By being the best possible partner, driving game-changing innovation, and delivering a level of growth unmatched in our industry.

#### **50. United Healthcare**

*Hunter Block*

Based in Minnetonka, Minnesota, UnitedHealthcare is a vastly known worldwide American managed healthcare and insurance firm that has been around for decades. It provides services for both insurance and healthcare products while also being dedicated to assisting individuals in leading healthier lifestyles and ensuring that the healthcare system is effective for all.

#### **51. Dutch Bros**

*Madison Blake*

‘We may sell coffee, but we’re in the relationship business. Whether we’re slinging drinks or serving up smiles, Dutch Bros is all about you!’

“Taking meaningful and measurable action in Philanthropy; sustainability’ and diversity, equity and inclusion to drive us toward our vision of making a massive difference, one cup at a time.”

#### **52. Costco Wholesale Corporation (Cost)**

*Ryan Bevins*

Costco is a membership warehouse club, dedicated to bringing our members the best possible prices on quality brand-name merchandise. With more than 800 locations worldwide, Costco provides a wide selection of merchandise, plus the convenience of specialty departments and exclusive member services, all designed to make your shopping experience a pleasurable one.

#### **53. PACCAR Inc.**

*Chris Berkshire-Lewis*

PACCAR Inc is an American Fortune 500 company and counts among the largest manufacturers of medium and heavy-duty trucks in the world. PACCAR has substantial manufacturing in light and medium vehicles through its various subsidiaries. It was originally founded as the Seattle Car Manufacturing Company in 1905, primarily producing railroad equipment. In the 21st century, Paccar primarily manufactures trucks and heavy equipment.

#### **54. Starbucks Coffee Company**

*Madison Bartholomew*

## **55. Netflix**

*Ena Baker*

- It was founded by Reed Hastings and Marc Randolph.
- Started as a video rental company where DVDs were shipped out via mail.
- Transitioned into online streaming in 2007.
- In 2013 the first Netflix original was released, that show being *House of Cards*.
- At the beginning of 2022, Netflix offered more than 2,400 original titles.
- Currently has 213 million subscribers across 190 countries.

## **56. Samsung**

*Franklin Aparicio*

- Samsung was founded as a grocery trading store on March 1, 1938, by Lee Byung-Chull. He started his business in Taegu, Korea, trading noodles and other goods produced in and around the city and exporting them to China and its provinces.
- Samsung found more success compared to most other consumer electronics and smartphone brands in its focus on consumer-oriented innovation. The company makes a heavy investment in research and development every year and does not let its focus on innovation fall.

## **57. John Deere**

*Jaclyn Wojciechowski*

John Deere was founded in 1837. A blacksmith, John Deere, invented one of the first steel plows for farming. It was founded in Moline, Illinois which is where the current headquarters are to this day. The company has come a long way just starting with a basic plow to now working on autonomous farming equipment. They are a public company and on the New York stock exchange.

## **58. Walmart**

*Tyler Waterhouse*

Walmart is a multinational retail corporation that offers a variety of items and services at all their locations across mainly the United States. There are other locations internationally in Africa, Canada, Chile, China, India, and Mexico

The corporation was started by Sam Walton and the first Walmart was built in Rogers, Arkansas in 1962. The company began to grow at a rapid pace while expanding across the United States in the 1970's and 80's. It was listed on the New York Stock Exchange in 1972

The company is currently headquartered in Bentonville, Arkansas and is currently the world's largest retailer by revenue and the world's largest employer with around 2.2 million employees

## **59. Toyota**

*Brayden Vink*

- Founded in 1937 by Sakichi Toyoda
- Ceased Car production during World War II
- Continued car production in 1947 because they secured loans
- Invention of the Corolla
- Invention of the Toyota Camry
- Became the best-selling automobile in the late 1990s
- Became the world's largest automaker in 2008



## **60. Tesla**

*Pedro Villanueva*

Tesla Motors was formed to develop an electric sports car. Eberhard was Tesla's chief executive officer (CEO) and Tarpenning its chief financial officer (CFO). Funding for the company was obtained from a variety of sources, most notably PayPal cofounder Elon Musk, who contributed more than \$30 million to the new venture and served as chairman of the company, beginning in 2004.

## **61. Lululemon**

*Reece W. Umbarger*

Founded 1998 in Vancouver, Canada

Chip Wilson founder, headquarters located in Vancouver

Our mission is to create components for people to live longer, healthier, more fun lives

## **62. Titleist**

*Spencer Tucker*

Titleist, Golf's Symbol of Excellence, is the game's leading performance equipment brand, having earned the overwhelming trust of tour professionals, club professionals, competitive amateurs and dedicated golfers worldwide. The Titleist golf ball embodies superior performance, innovative design and technology, precision manufacturing and unmatched quality. It is the unequivocal #1 ball in golf and has been for 70 years and still counting. Titleist also sets the standard for golf clubs through an unwavering commitment to performance, meticulous attention to detail, and as the game's preeminent golf club fitter. Titleist golf gear, comprising golf bags, headwear, travel gear, accessories and golf gloves, also delivers the performance and quality excellence promised in every product that bears the Titleist Script.

## **63. Royal Dutch Shell**

*Brady Treloar*

"To safely market and distribute energy and petrochemical products while offering innovative value-added services."

## **64. To God Be the Glory Sports**

*Kameron Thomas*

This case analysis is based on the sport's development corporation, To God Be The Glory Sports. The case will properly address the corporations vision statement; mission statement; competitors; and include a SWOT analysis diagram. The purpose of this SWOT diagram is to provide insight on the strengths, weaknesses, opportunities, and threats of this corporation. The information presented in this analysis dispenses how the business composition of To God Be The Glory Sports has permitted the corporation to become successful. This case analysis is primarily supported by the owner of To God Be The Glory Sports, Cyril White.

## **65. PetSmart**

*Ivy Roth*

When it comes to pets, we're obsessed. There's nothing we wouldn't do for our pets, because there's nothing they wouldn't do for us. The company was founded by Jim and Janice Dougherty on August 11, 1986, and is headquartered in Phoenix, Arizona. The first two stores were originally called PetFood Warehouse, opening in Arizona in 1987. In 1989 the PetFood Warehouse name was changed to PETsMART. Along with opening their

first full-service grooming salon as well as bird, fish and small pet departments. Continuing along with the business, in 2005 they moved away from the “mart” mentality and focus on their “smart” solutions. That is where the final name that we came to know and love, PetSmart began.

## **66. Target Corporation**

*Alyssa Oudone*

To help all families discover the joy of everyday life.

That’s *our purpose*. Our mission. The promise of surprises, fun, ease and inspiration at every turn, no matter when, where or how you shop. That quest to bring joy is at the center of every business decision we make. It gets our teams excited to come to work each day. And we bring it to life in so many ways.

## **67. Dick’s Sporting Goods**

*Jayson Miner*

Dick’s Sporting Goods is a well-known and popular retailer which has many strengths and is going to continue growing in a positive way

## **68. Lululemon**

*Emily Lunsford*

Lululemon is a yoga-inspired, technical athletic apparel company for women and men.

To elevate the world by unleashing the full potential within every one of us.

Be the experimental brand that ignites a community of people living the sweat life through sweat, grow and connect

## **69. Meta Platforms, Inc.**

*Chris Lauderdale*

Meta, formerly known as Facebook, is an American born social technology company founded by Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz and Chris Hughes.

Acquiring companies such as Instagram, as a secondary social media platform, and Oculus VR to support their most recent technological development the MetaVerse. Meta is a company highly focused on the acquisition of other ventures to achieve a common goal.

## **70. United Parcel Service, Inc**

*Carla La Rosa Valdes*

Founded in 1907 by two young boys with a \$100 loan in Seattle, Washington. The headquarters now located in Atlanta, GA. The brown color of the UPS package car was inspired by George Pullman’s luxurious railroad sleeper cars to show class

## **71. Airbnb Inc.**

*Joseph Kitengie*

Airbnb, Inc is an American San Francisco-based company operating an online marketplace for short-term homestays and experiences.

## **72. Unilever**

*Katlyn Killeen*

“Our goal is to add vitality to life. We meet every day needs for nutrition, hygiene, and personal care with brands that help people feel good, look good, and get more out of life.”

## **73. The Virgin Group**

*Michaela Keller*

Virgin Group is the largest private enterprise in the UK which includes of an assorted mix of businesses. It is considered to be one of the most worlds respected brand name and venture capital organizations established by Sir Richard Branson in 1970. The name Virgin has been selected to correspond to the plan of the firm being a virgin in every business it entered. The Virgin group businesses success increased in different sectors such as; transportation, music, financial services, soft drinks, mobile telephony, travel, and media

## **74. First American Financial**

*Cameron Johnson*

First American financial goes back to about 1889 in Orange and Los Angeles County where two firms were opened to manage title affairs in the area. Growth stayed steady, even with the growth of the population in the area. When Donald Parker Kennedy, son of founder C.E. Parker, joined the team he wanted to expand the corporation beyond Orange Country thus where they changed their name to First American for the first time. First American since then has now become a global competitor in their market. In 2010 the company split to create more focus upon each objective. The title insurance and settlements was named First American Financial Corp while their business analytics and property information became a separate entity called CoreLogic.

## **75. Activision Blizzard Inc.**

*Ashton Johnson*

Activision Blizzard Inc. is an entertainment media company specializing in video games.

Founded in 2008, through a merger between Activision Inc. and Vivendi Games.

Alan Miller founded Activision Inc. in 1979 and is also the founder of Activision Blizzard since the merger.

Activision Blizzard joined the S&P stock index in 2015 as one of the only two video game companies

## **76. PENN Entertainment, Inc.**

*Timothy Jean*

“We strive to create unforgettable experiences for our guests, employees, and partners. We are committed to being the most innovative and inspiring entertainment company, utilizing the latest technology, talent, and partnerships to bring our guests the best in live entertainment experiences”

## **77. Apple Inc.**

*Cole Huettl*

Apple Inc. is a Multinational technology company that has used phones as well as computers to become a mainstay competitor in the technology industry

Founded in 1976 by Steve Jobs Apple has seen the ups and downs of many market swings. However, they have led themselves in 2023 to be the biggest company by market capitalization. In 2022, google shows Apple with an astounding 394.3 Billion in revenue over the calendar year making them by far the highest revenue of any technology company

## **78. AliBaba**

*Tafara Hondonga*

Found in 1999 in Hangzhou, China by Jack Ma, who was an English teacher during that time  
AliBaba platform was launched in late 1999  
Softbank made the first investment in the early 2000s.

## **79. Milwaukee Electric Tool Corporation**

*Eli Herro*

The Milwaukee Electric Tool Cooperation is an American company that develops, manufactures, and markets power tools. It is a brand and a subsidiary of Techtronic industries

## **80. Nike, Inc.**

*Jeremiah Handy*

Nike, Inc. founded in 1964 by Bill Bowerman  
Formerly known as Blue Ribbon Sports  
Located in Beaverton, Oregon and sold its first shoe in 1972  
Changed name to Nike, Inc in 1978 and expanded business through Cole Haan, Converse, Inc. Cantar Sports, Inc. and Umbro

# **Exercise Science**

## **81. What Stretch Type Prepares an Athlete to Produce More Force?**

*Sara Branson*

Stretching has long been thought to decrease injuries, improve performance, and improve flexibility. However, no evidence has been found to prove its significance in decreasing injury risk and it has been proven to increase flexibility, but does it improve performance (Parrott, 2013)?

The two stretches that will take the focus of this study are static stretching and Proprioceptive Neuromuscular Facilitation (PNF). Static stretching is holding a position at which the joint has reached its endpoint. PNF stretching involves a partner and is commonly explained as a contract-relax method (Parrott, 2013).

Research was conducted in order to find the best stretch to prepare athletes for their sports. To do this we compared and contrasted the force production of a standing long jump following different stretches. A standing long jump was used because the main muscle used to produce force in the forward direction is the hamstring, and the hamstring is one of the most commonly injured/tight muscles.

In this study, we address the following hypothesis that PNF prior to the activity will result in a larger force production.

## **82. Correlation Between Hamstrings and Anterior Pelvic Tilt**

*Joshua Ogden*

The term "pelvic tilt" describes how the pelvis moves or is positioned with the rest of the body in the sagittal plane around a frontal horizontal axis. Anterior pelvic tilt occurs when the anterior superior iliac spine (ASIS) is lower than the posterior superior iliac spine (PSIS) in the sagittal plane (Suits, 2021). It also occurs when the ASIS is rotating inferiorly in relation to the PSIS. The determination of the anterior pelvic tilt is based on the position or motion of the ASIS in relation to the PSIS. It is a change in posture happening when the front of the pelvis rotates forward, and the back of the pelvis rises. The anterior pelvic tilt can be assessed in a static manner, functional manner, and during a functional movement, with each of these methods allowing for the determination of the interventions that should be undertaken. It is a prevalent issue of consideration in physical therapy because it frequently results in additional injuries, such as back, hip, and buttock pain.

# **Economic Equality and Religion**

## **83. After School Program with YMCA**

*Richie Harris Jr.*

As part of my project I volunteered with the Elementary Students of Oskaloosa at the YMCA After School Program. I worked in the after-school programs where I not only watched and played sports with the kids and helped with homework, but I also developed a relationship with them. Throughout the whole project, there were many ups and downs; from a kid getting their hand stuck inside a table to the kids telling me I was their favorite teacher.

## **84. Volunteering with Marked Tree United**

*Trekevious Jones*

Marked Tree United is a group that feeds and assists those homeless and struggling in the community. It also provides transportation services, etc.

## **85. Helping Animals in Need at Stephen's Memorial Animal Shelter**

*Tyler Montalvo*

I went to the local Animal Shelter and helped with cleaning and giving the animals love. The dogs and cats that are there need a home, and the Shelter provides a temporary home until a perfect one can be found for the animal.

## **86. Youth For Christ**

*Sterling Ramsey II*

I signed up to work with Youth for Christ, located in Okaloosa, Iowa. This experience was different for me. In my past I've worked for Transformation Church back in my hometown, alongside Michael Todd, but when I walked in to YFC it was a different feeling. I could really connect with each kid on a personal level on their paths to find our savior. Every Wednesday since February 22, I have been able to learn and connect with the members of Youth for Christ. Katie, the leader of YFC, gave me the opportunity to be able to be a part of change that this organization is creating in the Oskaloosa area. Coming from a city to a more rural area, I didn't know what to expect, but I couldn't be happier with the opportunity that I've received with YFC. Even though our community service hours will be over, I plan to keep attending the sessions each Wednesday next year as well.

## **87. Broadening Our Perspective about Individuals on the Spectrum**

*Jaiden Seabrooks*

I chose this organization to challenge me in a field where I had little to no experience in, to learn how to improve and develop skills I already possessed, and it did just that. I worked in a home with four individuals providing a 1 to 1, individual to support staff ratio. These individuals ages range from 22 – 67. Of the four individuals I worked with two are non-verbal, three fall on the spectrum, and one is not ambulatory as well as being nonverbal. This was significant in my learning on how to care for each individual, because each one of these individuals needs a different approach and type of care. The more I got to develop my relationships with each individual, the more successful I was in catering to their needs. The more I did this, the better my experience with them was. One way I believe that our organization could improve the benefits for our individuals is by partnering with a day program. This would help to encourage our residents to find and participate in new experiences on a more frequent basis.

## **88. Volunteering with Youth for Christ**

*Blair Speas*

Volunteering for Youth for Christ has been a beneficial experience for me, both as a man and as a follower of Christ. The organization has given me the platform to speak to a younger crowd and encourage growth in the body of Christ. I have been able to share my knowledge of the word of God with a receptive crowd of kids. I'm thankful for YFC giving me a chance to influence the minds of the younger generation (though not too much younger than I), and being able to try to steward their thinking towards Godly intentions, despite the world they are growing up in.

# **Sociology**

## **89. Quality of Life for Children with Divorced Parents**

*Kennedy Young*

Evidence indicates that quality of life for child is dependent on the relationship status of their parents. Quality of life can be based on the idea of the “American Dream” which refers to the dream of building a healthy life by getting married, having children, and instilling them with values. Using survey research, this study aims to better understand why children’s lives are so impacted by their parent’s relationships. From research conducted through this study, and findings of other studies, it is evident that quality of life for children with divorced parents is much higher than those with divorced or separated parents.

## **90. How Does Parenting Style Influence the Likelihood of a Child Committing Delinquency?**

*Anna Wetrich*

This project looks to see if there is a relationship between parenting styles and the likelihood that an adolescent will become a juvenile delinquent. The parent-child relationship is important in describing many behaviors. Adolescents that have been removed from their home by the legal system due to delinquent behavior are the subjects of this research along with a control group of adolescents that are randomly chosen. The level of juvenile delinquency and the adolescent’s description of their parents parenting style are the variables that are examined for their relationship.

## **91. Juvenile Delinquency and Social Status**

*Santiago Vidal*

Juvenile delinquency is the habitual committing of criminal acts or offenses by a young person, especially one below the age at which ordinary criminal persecution is possible. Social status is a person's standing or importance in relation to other people within a society. The socioeconomic strains that low income families face, impact a juvenile's life and can influence them into being involved or committing delinquent behaviors. Changes within a low-income families' social economic status (SES) are the years that juveniles tempt to commit delinquent behaviors. Low SES juveniles are more likely to be stereotyped and arrested by police officers due to their race and ethnicity background as well as their socioeconomic status.

## **92. Religion as a Deterrent to Crime**

*Levi Strausser*

This study will look to find if religion is an effective deterrent to crime compared to the laws and policies designed to deter crime today. Many see a problem with the laws and policies designed to deter crime for reasons such as not harsh enough punishment for the crime committed, little preventative punishment to harden offenders, and offenders knowing little about the penalties for specific crimes.

For religion, many dedicate their whole lives to it as it gives meaning and purpose to their lives. It also provides us with ideas of right and wrong reinforced by divine reward or punishment. Along with a range of rules and guidelines to follow as a lead to achieve the divine reward. Religion also teaches social control and strengthens social order as it is essential for cohesion and efficiency of a society by providing spiritual, social, and psychological support for individuals and families.

## **93. Effects of Social Media Consumption on Romantic Relationships**

*Isabell Smith*

Romantic relationships are eroding in contemporary society. A major factor contributing to this is social media consumption. This literature review offers insights into why this is the case. This literature review examines how the role of social media has played a part in how individuals in romantic relationships are affected. Key findings revealed a trend towards pursuing casual romantic relationships, and a term known as "ghosting" to terminate romantic relationships. This literature review investigates the role social media plays in the modern dating scene within college students.

## **94. What Role Does Media Exposure Play in The Reproduction of Gender Stereotypes in Sports?**

*Zolique Samuel*

An individual's gender has a significant impact on many aspects of their lives, including but not limited to how they are expected to act, how others view and judge them, the roles they choose to play, and the opportunities that are accessible to them. This paper investigates how media exposure contributes to the perpetuation of gender stereotypes in sports. Our opinions on gender in sports are greatly influenced by the media. Sporting events, athletes, and their performances are frequently covered by the media, which might reinforce gender stereotypes and contribute to the persistence of gender imbalance in sports. The media not only creates but also promotes gender norms and expectations that may limit the opportunities and accomplishments of female athletes through the use of language, images, and storytelling. According to research, women athletes are portrayed in the media more passively and subordinately than male athletes since the media prefers to emphasize on women's physical beauty rather than their athletic prowess. This would have a detrimental effect on female athletes' perceptions of themselves, the way they are perceived by others, their chances of landing sponsorship and endorsement deals, as well as their general standing in the sports world.

## **95. Characteristics of School Shooters**

*Steven Murray*

Mass school shootings have become a part of society and seem to have no end to how many lives will be lost in the years to come. By using the mistakes from the past and learning what characteristics are needed to push a human being that far will be the key to preventing future mass shooters. We can accomplish this by using such characteristics such as home life, race, access to guns, amount of interest into death, and even just as simple as bullying. Using these different characteristics that weren't heavily looked at in the previous shootings, we can see a pattern start to build and understand that there is always more behind the person everyone thinks they know. To find out how much the communities knew about the differences in characteristics and to just see what people knew about school shooters, researchers decided that it would be best to do research surveys on the different types of aspects including if kids were scared of school shootings, if lower income parents worried, strong support of gun law regulations. These answers concluded that in today's society, kids, and parents are scared to send their kids to school because of the off chance that their kid will become another statistic in the news.

## **96. Student Primary Language/Educational Performance**

*Valeria Quiroga*

In international students who come from different types of countries is concerned with the history of immigration along with the exchange of culture of the country. In addition, many students come from families that have recently immigrated to the United States, while others come from families that have lived in the United States for generations, but still link their culture to their ancestral languages. Students of such ancestry tend to have second language proficiency issues as most of the students' homes tend to have a first language.

It has been possible to carry out different English programs in schools such as bilingual education, which have the objective of trying to help students who do not speak English and thus achieve that they have different developments or abilities when speaking this language, keeping them with his primary. language, as well as their cultural identity. These programs are created to include intensive English language instruction and support services, such as tutoring or counseling.

## **97. Hirschi's Social Bond Theory and The School Shooter**

*Shinead Promnitz*

School shootings happen more often than they used to, many sociological perspectives have been used to study the reason for this, but none have thought to use Hirschi's social bond theory. This study analyzed the lives of seven different recorded school shooters. Hirschi's social bond theory was then applied to each individual's life. It was determined that a majority of those studied had an attachment bond, some had involvement, and some had commitment, but none had the belief bond. It was concluded that the attachment bond can be argued to be very important but a lack in belief in authority and societal ethics is what will lead to a school shooter.

## **98. How do Social Factors Play out in the Nurturing of serial killers?**

*Gian Marco Frassinetti*

Serial killers throughout history have created an overwhelming variance of feelings consequently to their actions. Most often the association of a serial killer corresponds to the media description of an evil disturbed man with no hope of being rehabilitated as a healthy person for society. This is a major element that needs more focus when considering harsh punishment for these individuals over rehabilitation and cures in order to recover the trauma or aspect that has seen the development of an evil presence within their individual selves. Many social factors that come into play when describing the phenomenon of nature against nurture in the development of serial killers. Studies show common patterns among serial killers and the prior life experiences that led to their "mental insanity" and transformed them into serial killers. Throughout this research proposal, theories regarding social



factors that impact the development of hatred that pushes these individuals to being left out and desiring “revenge and empowerment” will be presented as evidence to prove that serial killers shall be helped and cured in an attempt to recover such person.

## **99. Gender Inequality in the Household Chores**

*Natalia V Lopez*

Gender inequality in the household refers to the unequal distribution of household labor, decision-making power, and resources between men and women. Despite progress in gender equality in many areas of society, traditional gender roles and expectations still persist in the home. Women continue to bear the majority of caregiving and domestic work, even when they are also employed outside the home. This unequal distribution of household labor can limit women's opportunities for career advancement, increase their stress levels, and contribute to a gender pay gap. In addition, women often have less decision-making power within the household, which can limit their ability to shape their own lives and those of their families. Addressing gender inequality in the household requires challenging traditional gender roles and expectations, promoting shared responsibility for caregiving and domestic work, and increasing women's access to resources and decision-making power.

## **100. Sex Trafficking Victimization and Socioeconomic Status**

*Graishous Greener*

Human trafficking, specifically sex trafficking, is becoming more talked about within our society today. This is a research and proposal for research paper that will discuss sex trafficking, what it is and the different definitions and meanings that follow and then discuss risk factors with sex trafficking victims. The hypothesis of if a person becoming a victim of sex trafficking is related to their socioeconomic status, then victimization rates will be greater in people that have low socioeconomic status, is looked at through the lens of secondary data. Data about sex trafficking, and victimization rates are pulled from the Polaris Project and the National Human Trafficking Hotline. The anticipated findings are that although the hypothesis could be correct in that people with socioeconomic related risk factors have a greater chance of being trafficked, having risk factors doesn't automatically mean victimization.

## **101. Intergenerational Transmission of Crime**

*Makenna Gray*

This examines the intergenerational transmission of crime through socialization, with a particular focus on differential association (identity) theory. Using peer reviewed literature and academic journals on the differential association theory and its applicability to intergenerational crime transmission. The findings suggest that criminal behavior is often transmitted across generations through family socialization and exposure to deviant behaviors. Analysis of the differential association theory provides insights into how individuals learn and internalize criminal behavior through their social interactions and networks. Through the literature, it was found that individuals who had experienced a higher level of exposure to criminal behavior and deviant social networks were more likely to engage in criminal activities.

## **102. How does Social Media Interaction expose your Gender Identity?**

*Alexis Burch*

The 21<sup>st</sup> century brought about young people using social media as their primary way of talking to each other. But we don't really know how boys and girls talk to each other online, depending on what kind of person they are. We think that online conversations make people focus more on who they are as part of a group, and they act in ways that seem like what's normal within that group. This happens because people start to feel like they're not really individuals when they're online. Researchers study how people use words on social media to show their

gender on purpose. Many studies have looked at how people interact with others and what happens as a result. Gender is one of these groups and it affects how people act and relate to others in different parts of society. When a certain way of talking and interacting with each other based on gender spreads to the internet, it creates rules for how men and women communicate online

### **103. How Geographic Location Influences Public Perception of Drug Cartels**

*Michael Baker*

This research proposal aims to investigate the impact of geographic locations on public perception of drug cartels. The study will use a mixed-methods approach, including surveys and interviews with participants from different regions to examine how their geographic location affects their understanding and perception of drug cartels. The research will also explore how demographic factors such as age, gender, and education level may influence perceptions of drug cartels. The findings of this study will contribute to a better understanding of how geographic location influences public perception of drug cartels and provide insights into how to effectively combat drug-related crimes in different regions.

## **Human Services**

### **104. William Penn University Student Services Department**

*Zolique Samuel*

William Penn University provides the opportunity for an educational experience with a focus on leadership, technology, and the Quaker principles of simplicity, peace-making, integrity, community, and equality.

### **105. Mahaska County Sheriff's Department Intern**

*Santiago Vidal*

The mission statement for the sheriff's department is to protect and serve the people and visitors of Mahaska County.

### **106. American Home Finding Association**

*Peyton Van Blaricom*

The Mission of the American Home Finding Association is to provide exceptional services that nurture and improve the quality of life for children and families.

### **107. Eunoia Family Counseling**

*Nicholas Birely*

My practicum placement is at Eunoia Family Counseling here in Oskaloosa. Their mission statement is "creating an inclusive therapeutic environment for all people and belief systems to receive non-judgmental and compassionate outpatient counseling services" and the word Eunoia stands for well-minded or beautiful thinking. I think that it says a lot about what they do, in that they treat all their patients as people who are all beautiful inside and that all are worth helping.

**108. Oskaloosa Middle School Student Services**

*Natalia V. Lopez*

“Our district is committed to providing quality educational services to maximize the potential of ALL learners with exceptionalities. The Student Services department provides support to staff, students, and families across all instructional programs in the Oskaloosa Community School District.”

**109. Kinetic Edge Occupational Therapy**

*Michael Baker*

“To transform lives and restore hope through movement.” Kinetic Edge has a vision to “Create a community of healthy, happy, and hope-filled people.”

**110. Oskaloosa Police Department**

*Matthew Landsperger*

The Oskaloosa Police Department will work in partnership with the community to reduce the fear and incidence of crime, to enhance the quality of life, and to render the highest standards and ethics of professional law enforcement.

**111. Eunoia Counseling**

*Justin Moeller*

The organization I selected for my 100 service hours was Eunoia counseling in Oskaloosa Iowa. The mission statement of this organization emphasizes creating an inclusive therapeutic environment for all people and belief systems to receive non-judgmental and compassionate outpatient counseling services. The word “Eunoia”, a Greek root, means well-minded or beautiful thinking. Eunoia counseling was created in 2019 with the vision of creating an inclusive therapeutic environment for all people and belief systems to receive non-judgmental and compassionate outpatient counseling services

**112. YMCA Childcare**

*Journie Augmon*

The YMCA’s mission is to put Christian principles into practice through programs that build healthy spirit, mind and body for all.

**113. Crisis Intervention Services**

*Isabel Lynch*

The mission of Crisis Intervention Services (CIS) is to work to end sexual assault and domestic violence in our communities through support, emergency, safe housing, counseling, and prevention through education. Our vision is to accomplish the greatest amount of good, to as many survivors as possible, through compassion, crisis counseling, holistic healing services, and advocacy.

**114. Pekin Community High School; School Counselor**

*Faith Goudy*

“The mission of the Pekin Community School, serving as a unifying agent of our communities, is to provide lifelong learning through the commitment to quality educational programs that prepare the student to be effective, successful, and responsible citizens.”

**115. Crisis Intervention services (CIS)**

*Deriana Bryant*

The mission of Crisis Intervention Services is to provide prevention, life skills, education, intervention, shelter, and outreach services to empower persons, families, and the community to end all forms of violence.

**116. United Way of Mahaska County “UWMC”**

*Carly Still*

The United Way of Mahaska County (UWMC) “empowers communities by promoting education, encouraging healthy living, and strengthening financial stability”.

**117. Imagine the Possibilities**

*Amelia Lara*

To empower people to reach individual achievement across the spectrum of life.

**118. YMCA Childcare**

*Amanee Clark*

The YMCA’s mission statement is to put Christian principles into practice through programs that build healthy spirit, mind and body for all.

**119. River Hills Community Health Center**

*Carol Faye*

Our mission is to improve the health outcomes of our patients by providing exceptional health care services.

## **Addendum**

**120. Athletes’ Self-Perception in Comparison to Behavior and Morals**

*Haylee Schwark (Sociology)*

Athletes have demonstrated for years that their behavior and morals rarely effect how they see themselves and how others see them. This potentially could come from athletes being held above the rest of society no matter what their actions are, the idea that in sports you must do whatever in order to perform and win and the list continues. In the study proposed, we would collect data from surveying 100 student athletes (50 men and 50 women) from William Penn University. The participants in the study would be asked a combination of questions about their self-perception, then followed by questions about their morals and decision making. We then would take their behavior choices, score them based on a point system, and compare them to what their perception is of their role model figure in society. Collecting data with demographic questions will allow findings to be generalized based on human characteristics (e.g. age, gender, sex, and religious beliefs) and environmental characteristics (e.g., sport/s played). The study will be conducted with the main purpose of attempting to draw conclusions about how athletes perceive themselves in society in comparison to what their behaviors show.

### **121. Effects of Torque in College Bowlers' Knees**

*Alexis Lake (Biology)*

The earliest known forms of bowling date back to Ancient Egypt; however, it has only been within the last 50 years that we are able to calculate the torque of the knee by using a force plate, focusing on the z axis and the transverse plane. This is important because bowling can cause some serious injuries as you mostly use one side of your lower body and the opposite side of your upper body. "In the late 1970's, AMTI produced the first force plate for use within clinical settings and biomechanics labs. Shortly after, companies like Bertec and Kistler began manufacturing for plate hardware as well." (Sparta Science, 2020)

I conducted this experiment to compare torque of the knee on an injured college bowler vs. non-injured college bowler.

My hypothesis is that the more torque you have when doing a one-step bowling approach on the force plate, it corresponds with an injury or imbalance.

### **122. The Effect of Seasonal Depression on Academics in College Students**

*Tegan Simmons (Biology)*

College students' mental health has been shown to be the most at risk for depression or depressive mood. Studies have found that 10-15% of college students struggle with depressive moods or illness. To avoid risk, exercise, a healthy diet, stress management and sunlight are recommended. Exercise temporarily boosts endorphins in the body that improve mental well-being. While sunlight increases serotonin levels and aids to stave off winter seasonal affective disorder. Winter Seasonal Affective Disorder (SAD) is a recurrent major depressive disorder in which episodes occur regularly in the fall and winter months and remit in the spring and summer months. The term seasonality is used to describe a period of time that involves predictable change, rather than a diagnosis. Symptomatic participants reported feelings similar to major depressive disorder (e.g., lack of concentration, sadness, hopelessness, and anhedonia), relatively high levels of impairment in daily activities, in particular avoiding or delaying doing daily tasks (Young, 2022). This study aims to highlight a pattern in decreasing gpa during the fall semester versus the spring semester for college students who experience depression. For this study, fall semester's gpa will be the determining factor. Studies have shown in the months of October through December onset of winter seasonal affective disorder is most likely to occur. These specific months can trigger the onset of this depressive disorder due to predictable factors such as the cold weather, the stress of taking finals, and the holiday seasons. The purpose of this study is to view the effects that depressive disorders and symptoms can pose to academics.

### **123. Early Life Stress: Predictor of Criminalistic Behavior**

*Catherine Patrick (Psychology)*

Stress is defined as "a physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation," according to the Merriam-Webster Dictionary. For children, stress can bring such an adverse effect which can cause physical or psychological strain. We see toxic stress lasting long periods and damaging several areas of the brain. However, as these children grow up without any interventions, would it be a predictor of criminalistic behavior? For this study, the goal was to investigate how those with toxic stress in childhood differ from those who dealt with healthy amounts of stress in regard to criminalistic behavior.

# Exercise Science

## **124. What Stretch Type Prepares an Athlete to Produce More Force?**

*Sara Branson*

Stretching has long been thought to decrease injuries, improve performance, and improve flexibility. However, no evidence has been found to prove its significance in decreasing injury risk and it has been proven to increase flexibility, but does it improve performance (Parrott, 2013)?

The two stretches that will take the focus of this study are static stretching and Proprioceptive Neuromuscular Facilitation (PNF). Static stretching is holding a position at which the joint has reached its endpoint. PNF stretching involves a partner and is commonly explained as a contract-relax method (Parrott, 2013). Research was conducted in order to find the best stretch to prepare athletes for their sports. To do this we compared and contrasted the force production of a standing long jump following different stretches. A standing long jump was used because the main muscle used to produce force in the forward direction is the hamstring, and the hamstring is one of the most commonly injured/tight muscles.

In this study, we address the following hypothesis that PNF prior to the activity will result in a larger force production.

## **125. Offensive Statistics of Men's Soccer**

*M. Baldomero*

Soccer is the most popular sport globally, and every year 32 countries compete for the right to win the World Cup. At a basic level it comes down to simply winning games; score more goals than the other team. This paper will examine the following USA regular season statistics of the last 10 years to see if a relationship exists between these factors:

- There will be no difference between Men's winning percentage among USA soccer during the last 10 years.
- There will be no difference between Men's goals for among USA soccer during the last 10 years.
- There will be no difference between Men's goals against among USA soccer during the last 10 years

## **126. X-Factor in a Golf Swing**

*Steven Skewes*

The sport of golf is said to have originated on the Eastern coast of Scotland near the capital of Edinburgh during the 15th century. It has now become a popular sport throughout the world. The golf swing is a chain movement, and a longer swing has been shown to increase driving distance. As golf courses have gotten longer, driving distance is a key factor for success in golf. The X factor is the motion of a golf swing. This paper will examine the X-factor:

- Do golfers with a greater ROM have a better swing?
- Is there a relationship between clubhead speed and the X-factor?
- Would there be a difference between male and female golfers for X-factor?

## **127. Comparing the Premier League and La Liga for Goals Scored**

*Shakore Simon*

Football is arguably the most popular sport in the World., The English Premier League (EPL) and Spanish Premier League (La Liga) are considered to be the best of all of the leagues. Many frequent conversations have come about on which league is the most competitive. Although some of the teams in both leagues may compete in other domestic competitions during their seasons, this paper will examine the following EPL and LaLiga 2021 2022 regular season statistics to see if a difference exists between the following factors:

- Which league scores the most goals?
- Which league has a better goal difference?
- Which league holds more time in possession?

## **128. Optimal Bowling Performance Methods**

*Madison Ross*

Bowling is a sport that has been around since the beginning of time. The sport has grown from using rocks and wood to changing the dimension of pins, bowling ball core, and cover stocks as well as lane conditions with different oil patterns and difficulties. Every year bowlers compete for their own claim to fame while competing in PBA tournaments to receive trophies. This paper will examine the following PBA bowling styles in the 2022 seasons statistics to see if a relationship exists between these factors:

- Do right or left-handed bowlers have a higher average?
- Do one- or two-handed bowlers have a higher average?
- Does spare percentage affect tournament qualifying?

## **129. Pelvic Tilt, BMI, and Back Pain**

*Jessica Skewes*

The spine is a major structural component of the human body. Because of its centrality, the spine is crucial for stability and flexibility in everyday movements. Unfortunately, on the flip side, it makes it very easy for things to go wrong and that can lead to pain. In today's day and age, eight in ten Americans experience back pain. Amongst other things, pelvic tilt and high BMIs have both been deemed as possible contributors to back pain. The purpose of this study is to compare the two to determine if pelvic tilt or BMI is a more statistically significant contributor to back pain amongst a specific group of people.

## **130. The Effect of an Elevated Heel on Squat Biomechanics**

*Kiana-lei Young*

There has been an increase of people going to the gym to work out. One of the most popular exercises that is done is the squat, an exercise that is simple yet very complex in movement. A proper squat is to have a flat, neutral spine, feet facing forward, knees aligned with the feet, knees behind the toes, and the squat bar staying parallel to the ground. The previous statement demonstrates the complexity of completing the proper squat. Adding to the complexity, the choice of shoes worn to the gym could influence squat mechanics. The purpose of this study was to examine the effects of an elevated heel on lifting kinematics at the hip, knee, and ankle using a back squat. A heel wedge will be employed to replicate different shoe heel heights. It is hypothesized that there would be no significant differences at the hip, knee, and ankle due to lifting with the use of heel wedges.

## **131. Correlation Between Hamstrings and Anterior Pelvic Tilt**

*Joshua Ogden*

The term "pelvic tilt" describes how the pelvis moves or is positioned with the rest of the body in the sagittal plane around a frontal horizontal axis. Anterior pelvic tilt occurs when the anterior superior iliac spine (ASIS) is lower than the posterior superior iliac spine (PSIS) in the sagittal plane (Suits, 2021). It also occurs when the ASIS is rotating inferiorly in relation to the PSIS. The determination of the anterior pelvic tilt is based on the position or motion of the ASIS in relation to the PSIS. It is a change in posture happening when the front of the pelvis rotates forward, and the back of the pelvis rises. The anterior pelvic tilt can be assessed in a static manner, functional manner, and during a functional movement, with each of these methods allowing for the determination of the interventions that should be undertaken. It is a prevalent issue of consideration in physical therapy because it frequently results in additional injuries, such as back, hip, and buttock pain.