Title: Factors that Influence Collegiate Athletes when Choosing to Use Nutritional Supplements

Student Researchers: Megan Chacosky, Amanda Geary, Samantha Gross
Faculty Mentor: Tracy L. Oliver Ph.D., RD, LDN, Department of Nutrition and Dietetics

Abstract:
The purpose of this study is to determine which factors significantly influence collegiate student athletes to use oral supplements. While research has been conducted on the use of supplements, there is little information on what factors influence athletes when deciding to use a nutritional supplement. The research will be conducted through an anonymous survey that will be available for all NCAA, Division III student athletes at Immaculata University to voluntarily complete online through SurveyMonkey. Participants will include male and/or females between the ages of 18 and 26, of any race or ethnic background. The survey will include the athletes’ self-reported data concerning personal background information, use throughout a school year, and various reasons influencing their use of one or more of the supplements. It is our hypothesis that gender and product expectations will be produce the most significantly influential data in relation to the reasons collegiate student athletes chose to use oral supplements.

Title: The Role of Emotion in College-Students’ Food Choices

Student Researchers: Elyse Kusma, Courtney McCullough, Ashley Oister
Faculty Mentor: Tracy L. Oliver PhD, RD, LDN, Department of Nutrition and Dietetics

Abstract:
Various factors play a role in college student’s food choices such as increased pressure from workload and lack of sleep. The demands that must be met in order to achieve academic success can also attribute to student’s emotional state. The study hypothesized that emotional fluctuations played an unconscious role in determining a resident CUS student’s weekly food choices in the cafeteria measured over a 3-day time frame. Surveys were distributed during lunch for students to answer questions about their current mood and their meal selections. Based on the data, it was discovered that in 2/3 of surveys (n=60), emotions did not appear to impact a student’s food choice as previously hypothesized. Additionally, while students did not feel emotion impacted their food choices, 53% of students felt they could have made better food choices overall. These findings may show causation other than emotion impacts food choices and should be continuously studied.

Title: Nurturing Awareness to Sprout Participation at Immaculata University’s Community Garden

Student Researchers: Holley Bungo, Amanda Buehler, Kelly Marshall
Faculty Mentor: Tracy L. Oliver Ph.D., RD, LDN, Department of Nutrition and Dietetics

Abstract:
Community gardens are becoming increasingly popular in urban areas, school districts and higher education institutions. Their benefits include nutrition education, teaching gardening trade skills, and promoting social groups and minority language development. Immaculata University has had a community garden for the past two seasons; however, awareness and knowledge of the garden is lacking. Survey research regarding knowledge and attitudes on the community garden was conducted across campus by a random selection of students (n=31). Results indicated, 48.4 % of the participants (n=15) were aware there was a community garden with only 9% (n=3) responding they had participation in the project. Even with this disparity, 93.5% of participants (n=29) responded that they were interested in more awareness about the community garden with 83.8% (n=26) responding that they would be more likely to participate if they were informed of garden activities. This research aimed to gain overall knowledge and attitudes of the community garden at Immaculata to better promote this project for future students.
Title: Does Taste Influence Food Choices Among the Student Body

Student Researchers: Johann Evans, Melody Cox, Jonathan Delp
Faculty Mentor: Tracy L. Oliver PhD, RD, LDN, Department of Nutrition and Dietetics

Abstract:
The purpose of this research was to conclude if students prefer the taste of organic over conventional produce, in correlation with general knowledge of said matters. It was hypothesized that taste would be the overall largest factor in food choice decisions in students. The research was conducted specifically looking into correlations between education and awareness of health. Utilizing a 10 question survey and taste test, 50 non-specific undergraduate UI students participated (n=50). The results indicated 59% of participants preferred the taste of the conventional carrot, 39% the taste of the organic carrot and 2% did not prefer either, ultimately proving our hypothesis correct. Due the early pilot study, opportunity for education programs on organics may prove relevant at Immaculata.

Title: Reducing Stress in College Students Using Animal Assisted Therapy

Student Researchers: Gabrielle LaGace, Shannon Jenkins
Faculty Mentor: Carolyn Albright, Ph.D., Department of Human Movement Sciences

Abstract:
Objective: The purpose of this study is to determine the relationship between the type of animal assisted therapy session, either individual session or group session, and the effectiveness in stress reduction in college students. Methods: Heart rate, systolic and diastolic blood pressure and perceived stress level were monitored among college students during both individual and group sessions of animal assisted therapy with the use of a dog. Results: In the individual session, there was a significant decrease in heart rate, systolic blood pressure and perceived stress level in the first 5 minutes of the session. In the group session, there was a significant decrease in both systolic blood pressure and perceived stress level. In comparing the individual and group session, there was a greater decrease in stress level in the individual session. Conclusion: Individual animal assisted therapy sessions with a dog are most effective at reducing stress in college students.

Title: Behavioral Intervention Treatment for Depression Among Older Adults in Long-Term Care

Student Researcher: Christine Etzrodt
Faculty Mentor: Farzin Irani, Ph.D., Department of Graduate Psychology

Abstract:
The prevalence of depression and dementia-related behaviors in long-term care residents is well established (Jones, Marcantonio, & Rabinowitz, 2003). Although there are many evidence-based treatments for depression among older adults (Scogin, Welsh, Hanson, Stump, & Coates, 2005), researchers have only recently begun to adapt, develop, and test interventions for long-term care settings. Psychosocial and behavioral treatments involving pleasant events may be an effective adjunct to traditional treatments for depression in this population (Meeks & Depp, 2003; Meeks, Looney, Van Haitsma, & Teri, 2008). The Positive Pursuits Program (PPP) is an activities-based behavioral intervention designed to reduce depression and dementia-related behavioral symptoms in long-term care residents. A total of one hundred three elderly residents were included in the study, aged 73-97 years. The mean age was 86.83 ± 5.056. The Positive and Negative Affect Scale (PANAS) was used for evaluation of positive and negative affect, and the Minimum Data Set 3.0 (MDS 3.0) was used for evaluation of mood, behavior and cognition. The intervention effect was evaluated using a paired sample t-test on summary of scores for mood and cognition, and individual item level t-tests for behavior. Preliminary results show that a cost neutral non-pharmacological intervention...
Title: **Accuracy and Speed for Recognition of Familiar and Unfamiliar Faces and Hands**

Student Researchers: Joe Haughey, Jessica Snell  
Faculty Mentor: Farzin Irani, Ph.D., Department of Graduate Psychology

Abstract:  
Research has focused on understanding facial perception, with little emphasis on recognition of other body parts. This pilot study examined the accuracy and speed for recognition of familiar and unfamiliar faces and hands. Standardized protocols were followed to obtain images of participant’s faces and hands. Participants viewed photos and were asked to specify whether each face/hand was very familiar, somewhat familiar, unfamiliar or self. Results indicated greater accuracy for faces than for hands, but response time was faster for hands than for faces. Findings suggest that visual perception of body parts may be blind to higher-level factors such as ownership.

Title: **Utilizing Functional Near Infrared Spectroscopy (fNIRS) to Examine Resting State Functional Connectivity Patterns**

Student Researchers: Erin Hyland, Christopher Lawless, Jesse Main  
Faculty Mentors: Marie McGrath, Ph.D. and Farzin Irani, Ph.D., Department of Graduate Psychology

Abstract:  
Functional Near Infrared Spectroscopy (fNIRS) is a developing neuroimaging technology that offers a relatively non-invasive, safe, portable, and low-cost method of indirect and direct monitoring of oxygenation in the brain during both resting and task states. A topic of recent interest has been examining the interrelationships and activation patterns among brain regions while the brain is at rest, a phenomenon known as resting state functional connectivity. To date, most of the research in this area has been done with more established technologies including Functional Magnetic Resonance Imaging (fMRI). More recently, fNIRS has been used to examine resting state functional connectivity patterns due to the technology’s flexibility for use in a number of different settings. The proposed poster presentation will review research efforts to date in this area and identify future directions for research using this technology.

Title: **Yalom's Therapeutic Factors in Support Groups for Siblings of Children with Autism Spectrum Disorders: An Advanced Review**

Student Researcher: Kristin Jackson  
Faculty Mentor: Jed Yalof, PsyD, ABPP, Department of Graduate Psychology

Abstract:  
Siblings of children diagnosed with an Autism Spectrum Disorder (ASD) face significant challenges and stressors related to having a sibling with the diagnosis. Researchers have highlighted the need for supportive interventions to provide information regarding the affected sibling’s diagnosis, offer emotional support, and assist siblings in developing coping and problem solving skills. Support groups for siblings of children with ASDs are associated with improvements in self-esteem, knowledge of ASDs, and family relationships. Existing studies have not identified the variables that elicit positive outcomes in such groups. Yalom’s (2005) therapeutic factors provide one method of understanding the therapeutic processes which facilitate change in therapy groups. The current study examines the presence of six therapeutic factors in relation to the treatment needs of typically developing siblings. These factors are
instillation of hope, universality, imparting information, imitative behavior, development of socializing techniques and catharsis. Implications, limitations, and future directions are discussed.

**Title:** Demystifying Charles Chesnutts’ Tales of Conjure

Student Researcher: Courtney Gambrell  
Faculty Mentor: Melanie Kisthardt, Ph.D., Department of English/Communication

**Abstract:**

When Charles W. Chesnutt was first published in The Atlantic Monthly, 1887, he became the first African-American writer to accomplish such a feat. Specifically, Chesnutt conquered literary barriers and made history. One literary technique Chesnutt employed that was quite popular during the nineteenth century was dialect. However, nowadays it is becoming increasingly difficult for millennial readers to comprehend the dialect because linguistically, it is more phonetic than grammatical. My rationale for this project is to illuminate Nineteenth Century literature through thoughtful translation. I feel that through translation, the literature will maintain its inherent uniqueness. The translations should guide the reader through the inevitable dilemmas that he or she will face as he or she ventures into literature that is so cryptic. The significance of translation is not only to honor Charles W. Chesnutt for his literary achievements but also to extend the longevity of such literature so that its original purpose will not be misunderstood or forgotten. Chesnutt’s literature was written with the specific intent to loosen racial bonds. Therefore, the current generation may miss the opportunity to know Chesnutt’s literary contributions and a large part of African American literary history without some translation.

**Title:** Cumulative Risk and Caregiver Behavior During Two Learning Tasks

Student Researchers: Candice McCarthy, Rachel Ruger, Briana Ott  
Faculty Mentor: Dawn Kriebel, Ph.D., Department of Psychology

**Abstract:**

The purpose of the study was to investigate relations between cumulative risk and caregiver behavior during a tower and a puzzle task. It was predicted that parents who were higher in cumulative risk would exhibit less praise, more criticism and fewer mastery-oriented comments during these tasks. It was also predicted that cumulative risk would predict, beyond the influence of the child’s sex and age, the caregivers’ behaviors during these tasks. This study included 64 parents whose children were attending a Head Start preschool in Southeastern Pennsylvania during the fall of 2010. Information about cumulative risk was gathered from an extensive parent questionnaire. Parent behaviors were coded for Relational Socialization, Emotion Socialization, Teaching, Mastery, and Non-mastery using a 6-point Likert-type scale ranging from zero to five. Additionally, the total instances of praise and criticism were tallied during both the tower and puzzle tasks.

**Title:** They Already Know You

Student Researcher: Tayler Acree  
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics

**Abstract:**

Since the birth of the internet, personal data has been stored and mined. Current legislation regarding the use of personal data retrieved via the internet does not adequately protect an individual’s privacy. The rapid pace of technological advancements makes it difficult to create and adapt the regulations that
protect a user’s identity. Vague technological practices coupled with loose infringement laws can lead to the potential misuse of personal data. Therefore, to protect personal data, accurate and precise data privacy policies must be established and maintained. Internet and mobile device users must be educated in current and future personal data policies. Companies and their software developers also have an important role in protecting personal data. They must be committed to creating algorithms that protect a user’s privacy. This literature review explores how personal data is being used to exploit end user privacy as well as potential solutions to ensure the security of personal data.

Title: Closing the Gap: Gender Differences in Mathematics

Student Researcher: Mackenzie DeSeve
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics

Abstract:
According to recent studies, the gender gap in mathematics achievement in the U.S. seems to have been narrowing over time, and there is currently a debate whether males still outperform females. However, while girls may now be catching up to boys in math performance, it is clear that a gender gap still remains in terms of the number of women who choose to pursue math-related degrees and careers. This is an issue because not only may women be missing out on opportunities and fulfilling their potential, but the field itself is missing out on what women have to offer. Furthermore, as the U.S. faces a shortage of skilled professionals in the Science, Technology, Engineering and Math (STEM) fields, it risks falling behind as a global leader, so focusing on how to attract more women to mathematics can benefit the nation as a whole. This literature review discusses the main factors that have been shown to deter women from mathematics and reviews concrete solutions that could be implemented to solve these problems.

Title: Where is the Internet? Can Mobile Technology Leapfrog Africa’s Developing Economies into the Global Information Society?

Student Researcher: Gerry Dumani
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics

Abstract:
Africa makes up 14.1% of the world’s population yet only 2.6% of internet users reside in Africa. In 2011 Africa had 32 non-smart phones for every smart phone; in 2015 the expectation is that Africa will have 5.6 non-smartphones for every smart phone. According to Google, in South Africa “one in every six searches comes from a mobile phone”. Given the rapid rise of mobile phone usage in Africa, the mobile phone appears to potentially allow information poor societies to “leapfrog” across the divide to provide valued internet access. While it is noteworthy that mobile phones will become the entry point to the internet, there is no point in empowering people, if they do not understand why they are being empowered. There is an erroneous belief that “leapfrogging” is a clear and simple model that will jump start Africa into the digital era. This literature review examines the adoption, user behaviors, and perceptions of internet access using mobile technology in Africa.

Title: Information Technology and Social Responsibility

Student Researcher: Tyler Horan
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics

Abstract:
Social responsibility is a multi-faceted issue in the field of Information Technology (IT). These issues range from an individual's privacy rights to a government’s censorship of information. Due to a virtual environment as well as constantly changing technologies, it can be difficult to determine, maintain, and enforce ethically correct practices. This raises concerns of whether or not IT professionals as well as individuals are acting responsibly with respect to the use of information. This literature review explores the idea of social responsibility within the field of Information Technology. More specifically, this research will explore the problems faced by corporations regarding social and ethical decisions and practices. Possible solutions to these issues are explored, such as the teaching of IT ethics at a young age and legal enforcement of ethical practices.

Title: Managing a Help Desk for Higher Education

Student Researcher: Simba Kanyangarara
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics

Abstract:
A help desk supporting higher education manages electronic applications, including applications for administrative, academic, service, and social functions. Thus the help desk provides service to the entire campus community. So, what makes a help desk team service the campus community at an optimal level? A range of ideas have been identified and compared by help desk personnel. Several researchers promote the use of software to manage help desk performance. Therefore, software designed and implemented to manage help desk operations appears to be a component for optimal help desk performance. However, when looking at a range of product possibilities, choosing a product is difficult. This literature review seeks to determine if there is guidance for selecting the help desk management software.

Title: En la Aula de las Matemáticas: A Summary of Teaching Strategies for Narrowing the Anglo-Latino Achievement Gap in Mathematics in American Schools

Student Researcher: Alex Onderdonk
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics

Abstract:
Currently, decisions regarding the nation’s education systems are partly determined by standardized tests and the associated Adequate Yearly Progress (AYP) statistics. Therefore, the inadequate performance by Latino/a and English Language Learner (ELL/EL) student populations on standardized mathematics exams is troubling. While this racial discrepancy owes partially to an inequity of opportunity compared with other ethnic groups, it is essential to recognize that individual mathematics teachers can incorporate practices tailored towards fostering success for these students and all students. Literature reveals abundant strategies oriented towards this objective, which is an essential component in the fulfillment of AYP standards. Some of these methods cater to the student’s abilities to communicate in the classroom through means other than the English language, while others respond to alternative forms of cultural diversity in the classroom. This literature review finds that the success of all such strategies depends upon a teacher’s sociocultural consciousness.

Title: Metrics: Improving Software Quality

Student Researcher: T.J. Warner
Faculty Mentor: Mary Elizabeth “M.E.” Jones, Ph.D., Department of Math/Computer Science/Physics
Abstract:
Achieving software quality is a challenging endeavor. Over time, software companies have identified, defined, and applied metrics to assess the quality of their software. For companies beginning a software quality program, is there a standard set of metrics that could be used for initially evaluating the quality of software applications they produce? By reviewing existing software testing metrics, this paper evaluates the literature to determine if a fundamental set of metrics exists for improving software quality.

Title: Introduce Non-Euclidean Geometry Concepts to High School Students through the Taxicab Geometry

Student Researcher: Jake Tischler
Faculty Mentor: Ileana Ionascu, Ph.D., Department of Math/Computer Science/Physics

Abstract:
To gain full appreciation and understanding of Euclidean geometry, it is important to be exposed to some non-Euclidean geometry as well. Unfortunately, traditional non-Euclidean geometries (Riemannian or hyperbolic, for example) are far too complex for high school students to understand. Thus, simpler geometries are preferable at this level. The presentation considers three distinct distance functions in the plane: the Euclidean distance, the taxi-cab distance and the "max" distance, that give rise to three different geometries. Several types of geometric properties and objects are considered in each of the three cases, comparing the results. Emphasis is placed on the taxi-cab geometry, which can be applied in real world scenarios, like the urban geographies, where this geometry is a more realistic model than the (usual) Euclidean geometry in some ways.

Title: Where Linear Algebra and Calculus Come Together

Student Researcher: Bing Zhuang
Faculty Mentor: Ileana Ionascu, Ph.D., Department of Math/Computer Science/Physics

Abstract:
The presentation concentrates on optimization problems for functions of several variables. The Second Partial Derivatives Test for functions of two or more variables, as well as its proof using concepts and methods of Linear Algebra are discussed. The poster also provides a “compare and contrast” between single variable and multivariable optimization. Maple 13 software is used to generate the plots.

Title: Determining the Enzymatic Activity of Naturally Occurring Cellobiase in Mushroom Extracts

Student Researcher: Diana West
Faculty Mentor: Sister Susan Cronin, IHM, Ph.D., Department of Biology

Abstract:
Cellobiases are part of a group of enzymes collectively known as cellulases that are actively being studied and produced for use in the biofuel industry. These enzymes are capable of breaking down cellulose, a complex polysaccharide found in the cell walls of plants. These enzymes are naturally produced by fungi and bacteria which are being investigated for the use of breaking down non-food plant products for production of ethanol to replace fossil fuels. The purpose of this experiment is to determine the cellobiase activity in three species of mushrooms: Agaricus bisporus (store bought), Amanita rubescens, (field collected-IU campus) and Grifola frondosa (field collected-IU campus) for cellulosic ethanol production. The cellobiase extracted from these
mushrooms is used to determine the degradation rate of a sugar compound \( p \)-nitrophenyl glucopyranoside to glucose and \( p \)-nitrophenol which produces a yellow substance for detection of enzymatic activity.

**Title: The Antimicrobial Effects of Bupleurum Chinese Oil**

Student Researchers: Katemarie Gale, Danielle Senn  
Faculty Mentors: James K. Murray, Jr., Ph.D., Department of Chemistry and Jean Shingle, Ph.D., Department of Biology

**Abstract:**  
The purpose of this experiment is to determine whether bupleurum chinense oil has an antimicrobial effect on certain bacteria that cause foodborne illnesses and hospital infections. A previous study has been conducted on the effects of coriander oil in this manner. In that experiment, coriander oil proved to have an antimicrobial effect on all bacteria tested. The basic methods of the original experiment will be used to test bupleurum chinense oil's capability to kill *Escherichia coli*, *Salmonella typhimurium*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Enterococcus faecalis*. It is proposed that Bupleurum chinense oil will have similar antimicrobial effects on the bacteria that coriander oil did, due to the fact that both oils are from the Apiaceae family. The results did not support this hypothesis. Further study should be done with modified methods of producing the oils.

**Title: Synthesis, Characterization, and Evaluation of Various 7-benzyloxy, 7-heteroalkyloxy, and 7-heteroaryloxy-4-methyl-2\(H\)-chromen-2-ones as Potential Antioxidants**

Student Researchers: Brandi Santaniello, Kerry Smallacombe  
Faculty Mentor: James K. Murray, Jr., Ph.D., Department of Chemistry

**Abstract:**  
A recent report looked at the antioxidant properties of a variety of 4-Schiff base-7-benzyloxy coumarins. Several compounds prepared in this study were found to significantly inhibit the action of several well-known free-radical and ROS species. With the scarcity of reports on other 7-substituted coumarin derivatives, the aim of the current work is to synthesize a variety of diversely substituted 7-Benzylxoy, 7-Heteroalkyloxy, and 7-Heteroaryloxy-4-Methyl-2\(H\)-Chromen-2-ones and screen them for antioxidant activity against free-radicals and ROS. The lead compound in this project is 7-benzyloxy-4-methylcoumarin and the initial series looks at the preparation of variously substituted 7-benzyloxy-4-methylcoumarin derivatives. Based on the results of the assays and SAR, substituents will be analyzed and modified for further investigation. The second series of derivatives are prepared by focusing on the incorporation of \( N \)-heterocyclic rings at the 7-position, in lieu of the benzyloxy group. Derivatives will be analyzed as previously mentioned.

**Title: An In-House Raman Spectrometer, Phase II**

Student Researcher: Tom Padlo  
Faculty Mentor: Jiangyue (Luna) Zhang, Ph.D., Department of Chemistry

**Abstract:**  
This project is to investigate a functioning in-house Raman Spectrometer for the undergraduate chemistry program. The instrument is compact, portable and cost efficient. It has direct application to be used in instrumental analysis class to demonstrate the Raman Spectrometer. It also has potentials to be included in a number of chemistry curriculums such as physical chemistry, organic chemistry, and biochemistry. A few improvements were made from last year's construction. With the upgraded beam splitter, a newly designed sample holder and etc., Raman signal was successfully collected.
Title: DIGITAL STORYTELLING: Using Applications on iPad or iPhone

Student Researchers: Danielle Palmisano, Taylor Rosen
Faculty Mentor: Diane S. Grimes, MFA, Department of Art

Abstract: In today’s culture, education is moving towards universal mobility. The goal of this research experience is to promote the integration of global, digital, technology and visual literary into a creative multimedia presentation. Students involved researched and evaluated a variety of applications available to sketch, photograph, draw and paint to create their work virtually using an iPad or iPhone. The students took their research into different contents that they incorporated into the medium of digital storytelling and a final creation. Students also researched best applications to record their experience and research while right on the spot, outside the classroom. They have also developed their multi-literacy skills in integrating iPhoto, iMovie, iTunes, voice recording, virtual drawing tools, writing, note taking and web applications to develop their digital stories.