



## Health, Nutrition, and Clinical Sciences

### **Yuji Fujioka**

*Improving knowledge, foot health, and function of populations with non-specific foot pain*

Faculty Mentor: Jennifer Lucarevic

Background: Patient education is a cost effective method of preventing disease, the aim of this study is to see whether educational intervention alone is capable of improving a participant's knowledge of non-specific foot pain and improve foot health and function. Hypothesis: Educational interventions will improve the knowledge of participants with non-specific foot pain and will improve foot health and function. Methods: Participants (n=21) were given a demographic survey and pretest. Upon completion participants underwent an educational intervention that consisted of a PowerPoint presentation. Then participants were given a post-test with foot function index (FFI) measurement after the intervention. They were then followed up and asked to take the FFI and post-test 2 weeks after the initial meeting. Results: After the intervention, participant's knowledge of non-specific foot pain had significantly improved. Retention scores of the material were also significant. The FFI index varied among participants and change was not significant enough to conclude improvement in foot health and function. Discussion/conclusions: The results of this study indicate that an educational program can change knowledge of participants in non-specific foot pain, but do not impact foot health and function. The educational program tested in this study needs further development.

### **Katelyn Kahle**

*Comparison of Professional burnout between Prosthetics, Orthotics, Physical Therapy and Occupational Therapy*

Faculty Mentor: Jennifer Lucarevic

Background: Professional burnout is defined as the point when a person reaches mental and physical exhaustion with a feeling of frustration and personal failure (Baloguen, Titiloye, Balogun, and Oyeyemi, 2002). Burnout leads to decreased responsiveness to patients and an increased likelihood for a health professional to leave their job (Devery, Scanlan, and Ross, 2018), as a result, these factors create negative outcomes for patients though decreased client contact and even negative attitudes towards clients (Balguen et al, 2002). Propose: An observational research study was performed to determine if there was a difference between the professions of physical therapy, occupational therapy and prosthetics and orthotics.

Method: Participants took an online survey utilizing demographic questions and the Bergen Burnout Inventory. Results: Licensed or certified clinicians were recruited, and 209 participants responded: 43% were in PT, 10.5% in OT, and 46.4% in P&O. Outcomes comparing professions were analyzed with ANOVA (for total burnout scores) and chi-squared (for burnout groupings). There is not a significant difference in the total amount of burnout between the three professions, nor in the number of professionals in each grouping (satisfied, observant, or burnout; groupings defined by scoring convention established in the BBI-25, Nordang et al., 2010). Discussion: Although there was not a difference between the three professions, an alarming rate of participants across the three professions (54%) were at the observed or burnout level. Limitations include the ideal survey not being used, and the survey used may not be cross validated for this population. Future research should seek to determine which factors contribute to burnout within each of the fields and how these factors may be mitigated to protect rehabilitation professionals.

**Clarissa Chavez**

*ACL Injury Frequency in Athletic Population on Artificial Grass*

Faculty Mentor:

ACL injuries have been an up and coming injury taking over the lives of many athletes. The purpose of this study is to explore and compare the frequency of ACL injuries on artificial turf fields. This data was collected by a survey followed by a chi-squared test. 104 participants were recruited and 36.5% of participants that played on artificial turf tore their ACL while 42.3% of participants who tore their ACL did not play on artificial turf. Although the data is not significant it is a great start and can lead to further investigation that can include more of non-injured athletes as well as more male participants.

**Colton Graham**

*Association between Orthotic & Prosthetic knowledge and support of pro Orthotic & Prosthetic legislation*

Faculty Mentor: Julie Werner

Most practitioners in the Orthotics and Prosthetics field are reimbursed for their services through insurance companies. These insurance companies have made it more difficult to be reimbursed for their services. There has been bills drafted that would make it easier for O&P practitioners to get compensated for their work, but the bills have yet to be ratified into law. If voters knew more about the O&P field, they could make more educated decisions about O&P legislation that would benefit the field and thus the patients. I wanted to determine if there is an association between O&P knowledge and support of current/future O&P legislation. I used a novel survey to determine association between a control legislative bill and a pro legislative bill. There were 10 pre and post questions with short readings about the O&P field interspersed between them. I used a 2-way repeated measures ANOVA test with a 95% confidence interval to analyze the statistical data to determine association. I found that there was a significant interaction between pre/post scores with no significant interaction between knowledge level and no significant interaction between the knowledge tiers and pre/post scores. We see that regardless of knowledge tier the average score increased from pre to post scores after learning more about the O&P field and legislation. We also see that each tier voted sub sequentially higher the more knowledge they started out with. To further this research more surveys would need to be completed and a test to validate the self-generated survey. With more surveys completed and a test to validate the self-generated survey we can be more confident in the conclusion that more knowledge about the O&P field is more power to pass O&P affirmative legislature.

**Daicy Luo***Physical Activity and Adaptive Sports Equipment for Assessment in Quality of Life in Amputees*

Faculty Mentor: Jennifer Lucarevic

**Background:** For those with limb loss, there is little research to show what are specific identifiers to quality of life (QOL). When they want to participate in physical activity (PA), there are often barriers such as lack of resources and expense of equipment. However, PA has been shown to reconnect individuals with their communities and support psychosocial aspects related to quality of life.

**Hypothesis:** The purpose of this study is to see if individuals with limb loss experience differences in quality of life in regards to PA, including access to adaptive sports equipment.

**Methods:** We recruited individuals through amputee support groups, local adaptive sporting events and online. Individuals took a survey that included questions from Trinity Amputation and Prosthetic Experience Scale, International PA Questionnaire, and World Health Organization QOL-BREF. IPAQ was used to distinguish activity levels.

**Results:** 31 individuals, between the ages of 24-75, participated with a majority of individuals experiencing lower limb extremity loss. Those who had high activity levels had an average QOL score of 16.17 (SD=1.78) while those who had low-moderate activity levels had a score of 14.06 (SD=3.04). Those with access to sports adaptive equipment had an average score of 15.42 (SD=1.58) and those who did not had a score of 15.18 (SD=3.14).

**Discussion:** There was a significant difference regarding quality of life in those with high PA levels vs low-moderate ( $p=0.038$ ), but there was not a significant result in relation to adaptive equipment access ( $p=0.78$ ). More individuals need to be surveyed to provide a more diverse population of limb loss. This study allows us to continue to look into specific factors in increasing quality of life with those with limb loss and to continue to find pockets within the population to better support their needs such as encouraging social health."

**Kathryn Lowrie***Relationship between Efficiency of Gait and Polypropylene Leaf Spring AFO in Individuals with Stroke*

Faculty Mentor: Julie Werner

This study is necessary in order to provide information for practitioners, doctors and therapists the adequate information regarding orthotics for patients presenting with foot drop. The purpose of this study is to investigate whether or not using a Leaf Spring AFO alters a person's ability to perform the 10-meter walk test. This was measured by comparing time it took to complete the test and the number of times the individual caught their toe. I began the study with recruiting subjects who have sustained a stroke, and had each client complete the 10MWT, three times with and without an AFO on. Due to difficulty with recruitment I expanded my study to the normative population as well. The results thus far have not proven to be significant. Efficacy while completing the 10 MWT is most effectively displayed by the time it took the individual to complete this test ( $t=-0.08$ ,  $p=0.49$ ). The greatest limitation of this study was the lack of recruitment strategy. In future studies I recommend selecting an alternative way to measure efficiency.

**Kelsey Lawall**

*Amputation site complications and socioeconomic status of patients*

Faculty Mentor: Julie Werner

Information is readily available relating socioeconomic economic status to the prevalence of limb loss (Eslami, et al., 2007), but there is a lack of research conducted on the health and complications of residual limbs after the amputation has taken place, and the correlating socioeconomic status. As socioeconomic status has been demonstrated to relate with overall health (House, et al., 1990), and correlate with the rate of limb loss (Eslami, et al., 2007), as well as the prevalence of certain diseases (Connolly et al., 2000), it is hypothesized that patients with amputations of a lower socioeconomic status will present with a greater incidence of complications in regard to their amputation site and residual limb. A correlational, questionnaire-style survey was used to determine whether associative relationships exist between variables. The population included 54 English-speaking persons with a unilateral, lower limb amputation, ages 18 and older. A multiple regression analysis was used to analyze data with age, years since amputation, amputation level, and income as the x-variables, and skin problems in the last 3 months as the y-variables. The results from this study were not significant, failing to reject the null hypothesis. Despite the insignificant relationships represented by these results, this helps physicians and practitioners understand that the development of skin problems is most likely the result of a variety of factors, without socioeconomic status being the biggest predictor. I do not believe that further research should go into this study in the future.

**Morgan Lishawa**

*Comparison of Regular Exercise and Socket Comfort Scores*

Faculty Mentor: Julie Werner

The socket is a crucial part of the design of the prosthesis and it is important that the patient finds it comfortable. There are many known benefits of regular exercise, but it is unknown if it can help achieve a more comfortable socket. This study was done to see if there is a correlation between people with lower limb amputations who regularly exercise or are sedentary. A survey was distributed to people online and it entailed participants answering demographic questions, and completing the Socket Comfort Fit Score and Yale Physical Activity Survey Checklist (YPAS). There was not a significant correlation between SCS and regular exercise. This study can be used to help further research on what the benefits of regular exercise can be for people with amputations.

**Ashley Mooney**

*Success Rates of Cranial Remolding Orthoses in Male vs. Females in Cases of Brachycephaly*

Faculty Mentor: Jennifer Lucarevic

Cranial remolding orthoses have been used for treating multiple cranial deformities since 1979, when Clarren published his research on using helmets to correct plagiocephaly. In clinical practice, the best time to manage cranial deformity is within the first year of the infant's life, but correction can be obtained up to 18 months old. The purpose of this study was to examine helmet correction in babies, ages 1 to 18 months, who have been diagnosed with brachycephaly. Our hypothesis is that there will be more observed correction in males than in females. A retrospective chart review was performed to examine cranial measurements and scans pre and post-intervention with the Starband and Starlite helmets from Orthomerica. SPSS software was utilized to analyze the data. A repeated measures ANOVA was performed to determine if there was a within subject change in cephalic index after intervention, and differences based on gender. A backward stepwise regression analysis was then performed to determine the main predictors for post-intervention cephalic index. There was a significant improvement in cephalic index seen in participants after intervention ( $p < 0.001$ ). However, there was not a significant difference in correction rates based on gender ( $p < 0.001$ ). This study found that both male and females had successful outcomes after intervention with cranial remodeling orthoses.

**Rylie Weldon***Changes in Self Selected Gait Speed with Visual and Vestibular Challenges*

Faculty Mentor: Julie Werner

**Background:** This study looked at 14 healthy individuals without medical problems and their walking velocity under different parameters. As an individual ages they could lose the sensory input from one or more sensory systems and this can affect the quality of life of the individual.

**Purpose:** The purpose of this study was to determine if changes in balance from the vestibular system or changes in an individual's eyesight had a greater effect on self-selected gait velocity.

**Method:** Individuals were recruited and then asked to roll a dice three times to determine the order in which the trials were completed. They then completed the three different walking trials with the given parameters and a time was measured in which it took them to walk ten meters.

**Results:** Both the visual challenge and the vestibular challenge had a significant change in the self-selected walking velocity of the participants. The visual challenge showed a 19% change from normal and the vestibular challenge showed a 9% change from normal.

**Discussion:** Both internal and external factors have a significant effect on the walking velocity of individuals as seen in the trial. The limitation of the study is the small sample size and the inequality of the different challenges that were applied to the individual while walking. This has significant relevance to a field that provides braces and prosthetics that can create an inequality of the persons walking balance or their inability to perceive what is around them through proprioception.

**Gwen Gardner***Exploring the relationship between active runners and foot posture*

Faculty Mentor: Julie Werner

**Background:** When running, there is a significant increase in the maximum forces and peak pressures in the foot. The medial longitudinal arch is the main weight bearing source within the foot and it takes the brunt of these loads. As the loads are repeatedly placed on the foot, the tendons within the foot can stretch and cause a change in foot posture.

**Purpose:** The purpose of this study is to investigate the relationship between running activity and foot posture  
**Methods:** An electronic survey was used to collect demographic data including age, amount of running done, and foot length. Participants were then asked to submit a photo of their medial longitudinal arch.

**Results:** A total of 14 participants were part of this study. There were 6 runners and 8 control participants. There was not a significant difference in the distribution of pes planus based on running activity ( $\chi^2=0.07$ ,  $p=0.79$ ). There was not a significant difference in the distribution of foot posture between groups ( $p=0.75$ )

**Discussion/Conclusion:** There is no significant relationship found between running activity and foot posture. There were many limitations in this study, some included sample size and the exclusion of height and weight. This method may be a promising new way for practitioners to utilize telemedicine to reach more patients in a timelier manner.



### **Kaylee Clary**

#### *Correlation of Salt Intake and Prosthetic Socket Comfort*

Faculty Mentor: Julie Werner

**Background:** For patients wearing a prosthetic device, the fit and comfort of the device is one the most important things. A device that is uncomfortable does not get worn which has a negative effect on the patient's mobility and independence. It is important to discover what factors outside of the socket itself influence the comfort so we can help patients stay active.

**Hypothesis:** Does eating an abnormally high amount of salt (I) correlate with a decrease in an amputee's (P) socket comfort (O) compared to eating a normal amount of salt (C)?

**Methods:** Participants answered questions about their diet to determine their salt intake. They also rated their socket comfort. The data was then analyzed to see if there was any correlation between the two variables.

**Results:** There was no statistically significant difference between the socket comfort scores of those in the high salt group and the control group.

**Discussion/Conclusions:** No dietary clinical changes should be made yet based off of this study. Future studies should be conducted with better measures of both socket fit and a salty diet to determine if there is a correlation between the two variables. "

### **Meghan Fischer**

#### *Prosthetist Confidence with Different TH Prosthetic Designs*

Faculty Mentor: Julie Werner

**Background:** In the field of prosthetics, transhumeral (TH) level amputations are often the most challenging to treat and have the highest rejection rate from patients. Prosthetic Designs include but are not limited to body powered (BP), myoelectric (Myo), and Osseo integration (OI). As prosthetics continue to evolve and develop, incorporating emerging technologies, innovative procedures and other technological advances, it is imperative to consider how these advancements will impact practitioners.

**Purpose:** To compare confidence in Certified Prosthetists (CP) when treating patients with transhumeral level amputations.

**Methods:** Cross-sectional pilot study. An electronic survey was developed to evaluate self-reported levels of confidence from CPs when treating patients with BP, Myo, and OI transhumeral prosthetic designs. Responses were scored using a 5-Likert scale, with 1 representing 'not at all confident' and 5 'extremely confident'.

**Results:** 102 Certified Prosthetists responded to the survey. Each response was converted to a number (1-5), with a possible 20 point maximum per scenario. Data analysis was conducted using one-Way ANOVA comparing overall scores from each prosthetic design with CP confidence.

**Discussion:** CPs reported more confidence when treating patients with body powered TH prostheses than myoelectric ( $p = .001$ ) or Osseo integration ( $p = <.001$ ). This is a pilot survey where validity and reliability are not yet determined. Additional data analysis is planned to evaluate correlations between confidence and other captured demographic information such as education level, motivation, and years certified. Clinical applications could include improving access to TH education/resources, particularly for OI, which may improve CP confidence when treating patients.



**Megan Davies**

*Balance/mobility outcome measures: a pilot study*

Faculty Mentor: Jennifer Lucarevic

To determine a better treatment plan, clinicians need to know if an individual will have a difference in balance confidence based on what side they have amputated. People tend to lead gait with their dominant side (Dessery, 2011) which could show a distinct difference in mobility and balance in individuals with an amputation. The purpose of this pilot study is to investigate the feasibility of administering mobility and balance outcome measures to see if individuals with a transtibial amputation on their dominant side will show a difference in mobility and balance as compared to those with the amputation on their non-dominant side. There are many outcome measures used to measure balance and mobility during ambulation and those being used in this study are the Narrow Beam Walking Test, Four Square Step Test and the Timed Up and Go Test. The participants completed the TUG test, NBWT, and FSST. Participants completed the TUG test in an average of 5.7 seconds with the standard deviation of 1.9 seconds, the FSST in an average of 4.8 seconds with the standard deviation of 0.3 seconds. All the participants walked the entire distance of the beam when completing the NBWT. The participants all had surprisingly faster times than those found in literature.

**Sean Maher**

*Intrarater Reliability of the Thomas Test and the Standing Pelvic Tilt Test*

Faculty Mentor: Jen Lucarevic

Background: Hip flexors and pelvic tilt angle are known to be correlated with each other. For Hip flexors, there is a test that is widely used and studied called the Thomas Test whereas the Standing Pelvic Tilt angle test are not as reliable or at least do not have enough supporting evidence. For this reason the intrarater reliability of the Standing Pelvic Tilt Test will be tested between inclinometry measurements and to see how similar the test results were compared to the Thomas Test (for this study, the gold standard). Hypothesis: The first hypothesis is that Pelvic Tilt Test will be reliable the trials for each subject and the second hypothesis is that the results of the Thomas Test and the Standing Pelvic Tilt test will yield similar results. Methods: Two Tests will be done between the subjects (ages 20-39). The first will be a Thomas Test which will be performed for 3 trials. Then the Participant will perform 3 trials for the Standing Pelvic Tilt Test. Results: For the Chi Square test comparing the Standing Pelvic Tilt Test to the Thomas Test, the sensitivity was a 6/8 (75%) and the specificity was a 1/2 (50%) between the 10 participants. For the Kappa value was .146 and the Sigma value was .016. Discussion: Both tests failed to reject the null hypothesis but there was still some reliability shown in both tests. If done with better tester training and accounting for other factors (BMI), there could be more positive results of the pelvic tilt test in the future.

**Dana Green****Correlation between the Time after Limb Loss and Body Image Acceptance**

Faculty Mentor: Jennifer Lucarevic

Limb amputation is a procedure that is becoming more and more prevalent in present society. (Ziegler-Graham et al., 2008.) Limb loss not only presents with physical changes but psychological and social changes as well. (Holzer et al., 2014) Holzer et al. (2014) describes body image disturbance as the result of social values emphasizing vitality and physical appearance and fitness. (Holzer et al., 2014) The purpose of this study is to determine if there is any correlation between average time after amputation and body image acceptance. After analyzing the TAPES measure, I predict that the longer the time after amputation the more body image acceptance a person will have. In this study I will be using a survey, TAPES, to assess prosthetic user's acceptance to wearing the prosthesis. TAPES measures the psychosocial processes that are linked to adapting to a prosthesis, to activity restrictions associated with wearing a prosthesis, and to satisfaction with prosthesis. Seven (5 males, 2 female) participants that had an average time since amputation that was 22 years and an average TAPES score of 0.0786 were surveyed. The correlational findings were not significant; however, there was a positive correlation found between time after amputation and body image acceptance and a negative correlation found between age and body image acceptance. The clinical implications of these findings give the practitioner gain a better sense of the patients psyche throughout their transition with their amputation.

**Monica Pak*****A Mobile App to Promote Smoking Cessation***

Faculty Mentor:

Tobacco use, especially cigarette smoking, increases the risk for cancers, heart disease, stroke, lung diseases, and other illnesses. Cigarette smoking is more widespread in veterans than in the civilian population. Although cigarette smoking is a well-known risk factor for increasing the likelihood of causing serious diseases and disabilities, smoking continues to be linked to 480,000 deaths a year in the United States.

U.S. veterans who consented and were interested in smoking cessation were given a tablet with the smoking cessation app. The patient created a login, entered demographics, and quit date goal. Recruitment and data collection occurred over three months. At the end of the three months, the follow-up consisted of a post-test via phone or e-mail evaluating for changes in the stages of change, self-efficacy, and smoking cessation beliefs and attitudes.

Using the Transtheoretical Model as a framework, a pilot study was developed to assess the effectiveness of a mobile app that promotes smoking cessation. The app aimed to improve the self-efficacy, smoking beliefs and attitudes of the participants, and help them progress through the stages of change. Unlike text messaging and education-based only cessation programs, the mobile app used personalized interventions that corresponded to the participant's self-assessment results.

Adding interventions tailored to the individual smoker may help smokers successfully move through the stages of change over time. Support, resources, and interventions should be personalized, and provided to patients that may be hospitalized due to a tobacco-related health problem. Recent research has shown that veterans prefer technology based smoking cessation interventions due to their anonymity, minimal need for clinic visits, and convenience. A mobile app may be a cost-effective smoking cessation intervention that also appeals to veterans. Further research is warranted for this high-risk population to analyze the long-term efficacy of the progression through the stages of smoking cessation.



**Celestia Davila***Relationship between Risk of fall and Socket Comfort*

Faculty Mentor: Julie Werner

Background: There is a high prevalence of falls among individuals with a lower limb amputation. Risk factors that increase falls are unique to the individual and their setting. Objective: To investigate the relationship of having a greater risk of falls among individuals with a lower extremity amputation and their prosthetic socket comfort. Methods: Nine individuals with a unilateral transtibial amputation were recruited for this study from orthotic and prosthetic clinics. After a quick initial questionnaire, they performed the Four-Square Step Test (FSST) which assessed them for balance and likelihood of falls. Participants were then divided into two groups dependent of their socket comfort score (SCS) being relatively high (n=4) or low (n=5). Results: Those that reported a high SCS performed the FSST in  $10.42 \pm 1.54$  seconds while the low SCS group completed the test in  $15.64 \pm 4.84$  seconds. The data showed that participants with greater socket comfort had significantly quicker FSST times than those with lower comfort scores ( $t = -2.275$ ,  $p = 0.036$ ). Conclusion: Since the FSST can be used as a clinical identifier for having a greater risk of falls, reported SCS can similarly provide insight for those with increased likelihood of falling. Although there is a small sample size with little variation in reported SCS, practitioners should continue to focus their attention on improving socket comfort and identifying risk factors so falls are limited in severity and number.

Keywords: Fall risk, Prosthetics, Socket Comfort, Balance.

**Aldo Arias***Phantom Limb Pain Connected to Time since Amputation*

Faculty Mentor: Jennifer Lucarevic

There are many causes to a person having to go through amputation such as trauma, diabetes or have a congenital birth defect. About eighty percent of persons with amputation have experienced or are currently experiencing phantom limb pain (PLP). The purpose of this study was to describe the relationship between time since amputation and PLP in people with recent transtibial amputation (TTA) and those with > years s/p TTA. In this study, there were two participants with a mean age of 68.5 years. The Prosthesis Evaluation Questionnaire (PEQ) subsection: Body Sensations was used to obtain data. In order to complete data analysis, a continuous T-Test was used to compare PEQ: Bodily Sensation scores. The results indicated that both participants had similar overall Bodily Sensations scores, but answers varied on questions that were specifically asking about PLP. The participant that has had their TTA amputation for more than five years reported having minimal to non-existent PLP as compared to the participant that has a more recent amputation that is still experiencing PLP more frequently. In the future, if there were to be a larger sample size, the findings could be significant to clinicians in how they design their sockets and also methods of suspension.

**Norlizza Armas***Oral Health Promotion in the Medical Homes*

Faculty Mentor: Lauren Outland

**Problem:** In Los Angeles County (LAC), almost 40% of preschool children had dental caries. Studies show preventive measures such as fluoride varnish (FV) application to children's primary teeth can prevent caries. Yet, the majority of pediatric medical clinics do not routinely apply FV during well child care (WCC).

**Method to Address Problem:** According to the national Medicaid data, only nine percent of children ages one to two years have received a preventive dental visit. However, children see their primary care providers (PCP) an average of 10 visits or more in the first two years of their lives. One strategy to increase oral health promotion is the integration of an oral health program in the medical clinics to decrease early childhood caries (ECC) among low-income, minority children.

**Innovation:** The Social Cognitive Theory (SCT) is utilized to promote a change in practice in medical homes to implement and adopt oral health practices in this Quality Improvement (QI) project. Providing oral health training to clinic staff will increase their knowledge and self-efficacy. Environmental factors to facilitate implementation, such as financial reimbursement for FV application, and barriers such as work flow impact, will be addressed. Implementation goals related to the number of dental referrals, FV applications, and parental education provided will be set. Pre/post-intervention data will be measured to see the impact of this QI project.

**Change Brought About by Intervention:** Providing oral health promotion training using the constructs of the SCT will facilitate the adoption and implementation of an oral health program in medical homes. Expected results include routine utilization of an oral risk assessment tool, and increased FV applications, dental home referrals, and parent education during WCC post-intervention.

**Implications for Research:** This QI project will show that an oral health promotion program can be successfully adopted and implemented in pediatric medical settings."



### **Celia Morado**

#### *The Orthotic Use in Active Lifestyles versus Sedentary*

Faculty Mentor: Jennifer Lucarevic

**Background:** It is known that for similar reasons active and sedentary lifestyles both could lead to complications with your feet such as feet pain. There is no research that compares the two lifestyles to each other and whether one lifestyle may lead to a need for foot orthotics more than the other.

**Purpose:** The purpose of this study is to determine if there is a relationship between activity levels and the need for foot orthotics.

**Methods:** 50 participants were recruited to take the IPAQ survey which was used to infer the MET's of each participant and place them in an active or non-active category. The participants were also asked if they currently use a foot orthotics. The means of active and sedentary participants that use foot orthotics were then compared to determine a relationship.

**Results:** Out of the 50 participants, 76 % (n=38) self-reported living an active lifestyle. The other 24 % (n=12) of participants self-reported living a more sedentary lifestyle.

**Discussion:** The results showed that there was no statistical significance found between activity levels and the need for foot orthotics. The limitations included: sample size, misrepresentation of the population, and data validity.

### **Ruth Nunez**

#### *Awareness of Care and Prevention of Diabetic Complications between Low-and-Middle Class Household Incomes*

Faculty Mentor: Julie Werner

**Background:** There are approximately 120,000 of amputation's each year in the United States. Of these amputations, diabetes mellitus accounts for the majority. The group most affected by this trend are low-income individuals. Why is this trend seen? It is hypothesized that lower limb amputations are most likely to occur among lower income individuals due to the lack of knowledge of care and prevention of diabetic complications. **Keywords:** [diabetes mellitus, knowledge, education, income levels]

Among different income groups, who is most likely to acquire a diabetes related amputation? Diabetes mellitus is the most common underlying cause of amputations in the United States and Europe and approximately 120,000 non traumatic amputations are done each year. (Lavery, 1999) It is no surprise that low income individuals are most likely to be diagnosed with diabetes. Can socioeconomic status and education about diabetes mellitus play a role in this trend?

The purpose of this study is to compare knowledge of care and prevention of diabetic complications between individuals of low- and middle-class household incomes. Knowledge and education on this pathology may decrease and even prevent limb amputation.

**Methods:** Participants who were over the age of 21, were provided with a survey that included questions about diabetes mellitus, education, income levels, ethnicity, etc. Surveys were available in both English and Spanish, digital and paper copies. There was a total of 33 participants in this study. There was a total of (n=22) low income individuals (n=11) middle class individuals. True and false questions about the main causes of amputations tested knowledge about diabetes related amputations.

Results showed that although knowledge about diabetes related amputations did not have a significantly difference ( $p < .035$ ) neither of the groups receive diabetes mellitus education from a healthcare provider

**Allison Hobbs***Intent for Immediate IUD Placement in Postpartum Women*

Faculty Mentor: Lauren Outland

**Problem:** In the United States, 33.1% of pregnancies were conceived within 18 months of a previous birth between 2006-2010. For postpartum women, conceiving within a short interpregnancy interval leads to detrimental outcomes for their newborn such as preterm birth, subsequent low-birth-weight, cerebral palsy, and neonatal death. Also, the mother can experience adverse health outcomes such as uteroplacental bleeding, preterm premature rupture of membranes, and uterine rupture. Family planning and education for contraceptive use after childbirth is a crucial topic of discussion that is lacking for millions of women within their first postpartum year. Nearly two-thirds of women after the birth of their first child have unmet contraceptive educational needs, with most limited to one encounter of counseling at the time of discharge.

**Method Used to Address the Problem:** Many women are lacking family planning and contraceptive education before birth, leading to no formulated contraceptive plan immediately after birth. This innovation will focus on providing women with the necessary information associated with short interpregnancy intervals while also presenting a strong recommendation for immediate IUD insertion after birth.

**Innovation:** This study, based on the health belief model, evaluates pregnant participants' intent to use postpartum contraception, specifically focusing on the intent to undergo immediate, non-hormonal intrauterine device (IUD) placement after birth. The 15 participants were recruited from a Prepared Childbirth class provided by French Hospital Medical Center (FHMC) in San Luis Obispo, California. The quasi-experimental, longitudinal study will implement an educational intervention in the form of a PowerPoint/oral presentation that exposes the risks associated with short interpregnancy intervals and the preventative benefits associated with immediate IUD insertion after birth. The assessment data regarding participant's intent will be obtained through baseline (pre-test) and post-test methods.

**Change Brought About by Intervention:** The educational presentation highlighting the risks associated with short interpregnancy intervals and benefits of immediate IUD placement had a large impact on the pregnant women attending the Prepared Childbirth class at FHMC. After the intervention, all women were able to recognize the dangers associated with short interpregnancy intervals and were also able to recognize the benefits related to IUD insertion immediately after birth. 4 out of 15 participants who planned on using another form of contraception expressed intent to undergo immediate IUD insertion after birth, as well as 5 out of 15 participants with no current contraceptive plan.

**Implications for Research:** Reducing the proportions of pregnancies conceived within 18 months of a previous birth is a major priority for advanced practice nurses, specifically Family Nurse Practitioners (FNPs) who focus on providing patients with quality family planning care. This study shows that providing women with information on postpartum contraception in the form of non-hormonal, IUD placement immediately after birth and the risk factors associated with short-interval pregnancies results in an increased intent to avoid detrimental health outcomes for the mother and unborn child."

**Kyle Roberts, Larissa Santana De Araujo**

*How reforms in the health care system of Cabo Verde since independence in 1975 have improved the nation's overall health despite financial and geographical limitations.*

Faculty Mentor: Payman Nasr

This presentation pulls together basic structural information, reviews trends in the growth of the healthcare system, and discusses the major health system reforms in The Republic of Cabo Verde, an island nation spanning an archipelago of 10 volcanic islands in Western Africa. Lacking natural resources, the government has strived to provide accessible health services for the population. The primary healthcare structure consists of six hospitals; two central hospitals in the capital, Praia, and four regional hospitals spanning from the north to the south archipelago. The primary healthcare is augmented with 28 health centers and several private clinics across the island chain. The Cabo Verde population are entitled to a basic package of health services, which covers prenatal care; emergency care; and treatment and prevention for HIV, tuberculosis and malaria. In addition, around 40% of Cabo Verdeans have social insurance through their employers, entitling them to more health services as well as sick pay. As a result, today, Cabo Verde's population is among the healthiest in Africa with greatly improved health indicators. The average life span has increased from 56 years in 1975 to 76.5 years in 2018 and infant mortality has decreased from 108 death in 1975 to 15 deaths per 1000 births in 2018. These gains have come despite spending less than \$200 on healthcare per person in 2018. The focus of the current report is to analyze the reasons for such achievement that by far exceeds the achievement of larger and richer African countries. The healthcare structure, health accessibility and the application of modern technology such the introduction of telemedicine to increase access to specialized care are also discussed.

**Luis Pere, Everardo Averlar, Frieda Hayes, Katherine Alfaro**

*Relationship between high school and college grade point average*

Faculty Mentor: Gioella Chaparro

While the effects of high school grade point average (GPA) tends to be disregarded by the majority of college individuals, high school GPA ends up being a pivotal factor in determining your college GPA. The purpose of this study was to examine the impact of high school GPA on current college GPA. Methods: Thirty participants (18-25 years old) were recruited for this study. Participants completed a five-question survey with a cell-phone. Survey questions included: demographic information, their high school GPA, and current college GPA. Statistical analyses were run using Pearson's correlation coefficient with  $p < 0.05$  set as the statistical significance. Results: After analyzing our data, we discovered that there was a significant low positive correlation between college GPA and high school GPA ( $p < 0.001$ ,  $r = .30$ ). Furthermore, our Pearson's score determine that there was a significant difference between both grade point averages. Discussion: Study findings demonstrated that there is a slight relationship between a student's high school and college GPA. This can indicate that perhaps students are still exhibiting the same studying behavior and patterns in higher education. Conclusion: Transitioning into college, individuals have the opportunity to begin a new academic chapter. If they experienced troubles during high school, college offers a new opportunity to elevate their grade point average. Future research can examine the relationships between study habits and current GPA to further explore this topic.

**Juan Gonzalez-Moguel, Sandy Garcia**

The effects of social network usage among Mediterranean youth.

Faculty Mentor: Enrique Oretga

The goal of the research is was to investigate the associations between social network service (SNS) usage and psychological and social health indicators among Mediterranean youth. This investigation examined these associations among a sample of Italian youths in order to better comprehend what dimensions of SNS usage are developmentally or culturally based in their association to indicators of psychological and social health. Additionally, this investigation aimed to uncover the influence of SNS usage on specific interpersonal relationship skills and self-worth. We aimed to determine our participants' offline and online interpersonal socializing skills and to assess the influence that SNS usage has on the development and execution of such skills. We hypothesized that satisfaction with offline interpersonal socializing skills would be positively correlated with satisfaction with online interpersonal socializing skills. Additionally, we hypothesized that specific online and offline interpersonal socializing skills (self-disclosure, empathy) would be positively correlated with high self-esteem and positive self-perception high capacity in online interpersonal socializing skills. This investigation will discuss the findings associated with psychological and social health as well as discuss possible differences among Mediterranean and US-based social network usage characteristics.