DCHS SCHOLARSHIP SYMPOSIUM

WEDNESDAY MARCH 2, 2016
2:00- 4:00 P.M.
ALLIED HEALTH PROFESSIONS BUILDING

SAINT LOUIS UNIVERSITY
DOISY COLLEGE OF HEALTH SCIENCES
ABOUT THE SCHOLARSHIP SYMPOSIUM

The purpose of the Doisy College of Health Sciences Spring Scholarship Symposium is to showcase ongoing faculty research as well as emerging scholarship and research projects that further the College’s mission of serving humanity through education, research, and engagement. By providing a space to highlight projects that connect to the College’s mission, the Symposium aims not only to raise awareness about College members’ activities but also to promote collaboration, disseminate knowledge, and provide an opportunity for networking and continued growth of research and scholarship.
Using Appreciate Inquiry to Develop an Entrepreneurial Mindset in a Graduate-Level Management Course

The Student Experience On-Campus Related to the Crisis in Ferguson, Missouri during the 2014-2015 School Year

Understanding higher education student learners: A self-reported evaluation of student media exposure and study habits

Institutional Readiness for Interprofessional Education among Nutrition and Dietetics and Athletic Training Education Programs

Effects of matched weight loss from calorie restriction, exercise, or both on cardiovascular disease risk factors: a randomized intervention trial

Impact of an Urban Food Aggregator on Diversity and Price of Locally Grown Specialty Crops

Does attendance at an adapted sports camp increase activity levels in children with cerebral palsy?

Development of a Falling Drop Method to Quantify Hemoglobin for Use in Resource Poor Settings

Immunohistochemical Characterization of Multiple Sclerosis Plaques in Human Brain

Impact of Super-utilizers on the Hospital Readmissions Reduction Program (HRRP) using Emergency Department Administrative Data

Effectiveness of a Web-based Behavior Modification and Education Program

Case-Control Studies of Vaginal and Vulvar Cancers and Gynecologic Screening: A SEER-Medicare Analysis

Instrumented Timed up and Go Identifies Mobility Impairments Related to Fall Risk in Persons with Multiple Sclerosis

Perspectives on how technology can assist in health management of working Baby Boomers
Validity of the PALM Palpation Meter in Measuring Pelvic Tilt

High Fidelity Human Simulation used to develop required behaviors in acute care

Chemoresistance-Induced Epithelial-Mesenchymal Transition of a Colorectal Cancer Cell Line

Expanding the circle: Implementation of an advocacy program to increase physician assistant (PA) student clinical site placement in rural Missouri

The Physician Assistant (PA) Alcohol Education and SBIRT Training Program in Missouri

Identifying Occupational Stressors to Inform Workplace Health Programs for Jail Corrections Officers in Eastern Missouri

Medial Tibial Stress Syndrome in Active Individuals: A Systematic Review and Meta-Analysis of Risk Factors

Knowledge and demonstration of key concepts following one movement pattern training session in females with patellofemoral pain

Feasibility and acceptability of a task-specific movement pattern training program for treatment of Patellofemoral pain

Quantifying Biomechanical Forces and Bone Strength to Estimate Fracture Risk in Diabetes

Predictors of Social Skills and Problem Behaviors in Homeless and Low-income Housed Preschool Children

Kinetics of Biofilm Formation by Staphylococcus aureus and Pseudomonas aeruginosa

Cinnamaldehyde Inhibits Biofilm Formation of MRSA

A Simple and Inexpensive Method to Induce Intracellular Hemoglobin C Crystal Formation to Diagnose HbC Disease for Resource-Poor Countries.
1. USING APPRECIATE INQUIRY TO DEVELOP AN ENTREPRENEURIAL MINDSET IN A GRADUATE-LEVEL MANAGEMENT COURSE

Author(s): Whitney Linsenmeyer, MS RD LD

Abstract: Entrepreneurship education has been rapidly gaining traction over the past several decades (Katz, 2003). Many educators are considering appreciative inquiry (AI), a positive philosophy that emphasizes conversational learning, as a pedagogical tool to cultivate an entrepreneurial mindset (Assudani & Kilbourne, 2014). The purpose of this study is to describe how AI can be used to develop an entrepreneurial mindset in a graduate-level management course for dietetics students. The four major components of the course will be overlaid by the four phases of AI: discovery, dream, design, and delivery, and supported by quotes from students’ work and the course evaluations. This research is aligned with both the Doisy College of Health Sciences commitment to quality teaching, as well as the strategic map priority of encouraging entrepreneurial activity.
2. THE STUDENT EXPERIENCE ON-CAMPUS RELATED TO THE CRISIS IN FERGUSON, MISSOURI DURING THE 2014-2015 SCHOOL YEAR

Author(s): Whitney Linsenmeyer, MS RD LD Tommy Lucas, MPA, MA

Abstract: The history of American colleges and universities has been marked, in part, by the crises that have occurred both on-campus and in the surrounding communities. The unrest in Ferguson, Missouri after the shooting of Michael Brown in August of 2014 was felt in different ways throughout the St. Louis metropolitan area, including institutions of higher education. The purpose of this study is to describe students’ experiences on-campus during this historic time. Data collection will involve 60-90 minute interviews with students from institutions within the St. Louis Metropolitan Statistical Area, including public or private, 4-year or 2-year, and those identified as a historically black college or university. Data will be analyzed using interpretive phenomenological analysis (IPA). This research is aligned with the Doisy College of Health Sciences mission of serving humanity through research and engagement, and also supports the Jesuit commitment to social justice in urban settings.
3. UNDERSTANDING HIGHER EDUCATION STUDENT LEARNERS: A SELF-REPORTED EVALUATION OF STUDENT MEDIA EXPOSURE AND STUDY HABITS

Author(s): Tommy Lucas; School of Education Kelly Hawthorn; Doisy College of Health Sciences, Physical Therapy, Farah Habli, School of Education

Abstract: The purpose of this study aims to assess higher education student learners’ exposure to media and the subsequent influences media has upon their social and study habits. Students maintained a self-reporting journal for seven consecutive days in order to understand their own use of time and the influence of engagement with various types of media. The objectives of our study are threefold. First, to understand and explain student learners’ media exposure time. Second, to understand the relationship between student learners’ time engaged with media and how it affects other social habits such as sleep and study habits. Third, to discuss the relative importance of the aforementioned factors affecting student experiences versus student perceptions of their own time management. The results of this on-going research study do not indicate that media exposure and other social activities result in less time devoted to studying, as suggested in previous research.
4. INSTITUTIONAL READINESS FOR INTERPROFESSIONAL EDUCATION AMONG NUTRITION AND DIETETICS AND ATHLETIC TRAINING EDUCATION PROGRAMS

Author(s): Anthony Breitbach PhD, ATC; Kathrin Eliot PhD, RD, LD, FAND; Mardell Wilson EdD, RD; Maria Chushak MS, Saint Louis University, St. Louis, Missouri

Abstract: The Doisy College of Health Sciences Strategic Map identifies the need to “Build Research Culture and Productivity” and “Build a Diverse and Connected College Community”. This Interprofessional research project works towards those needs through collaborative scholarship which connects multiple units, with national and international dissemination of the study findings. Interprofessional Education (IPE) is recommended to help promote collaborative patient-centered care. In turn, various external accreditors in the health professions have integrated IPE competencies into their standards. However, little is known about how Athletic Training (AT) and Nutrition and Dietetics (ND), professions with historically less direct institutional alignment to the health sciences, have incorporated IPE into their educational programs. The purpose of this study was to examine institutional factors affecting the level of IPE participation within ND and AT programs. In this ongoing project, the “Interprofessional Education Assessment and Planning Instrument for Academic Institutions” was distributed electronically to directors of accredited programs, in ND and AT. Respondents in ND (n=167) and AT (n=162) answered survey questions providing demographic information and addressing their institutions’ level of involvement and commitment to IPE. Differences emerged between ND and AT programs for several items in the instrument. Factors that affected the differences included the program’s academic unit and level of accreditation. Results showed that ND and AT programs have similar levels of IPE participation, but there are opportunities for further development. Institutional factors such as resource commitment, academic unit type and program level may affect the implementation, development and success of IPE initiatives. The researchers intend to collaborate further in the future to explore those factors.
5. EFFECTS OF MATCHED WEIGHT LOSS FROM CALORIE RESTRICTION, EXERCISE, OR BOTH ON CARDIOVASCULAR DISEASE RISK FACTORS: A RANDOMIZED INTERVENTION TRIAL

Author(s): Edward P. Weiss, PhD (1,2), Stewart G. Albert, MD (3), Dominic N. Reeds, MD (b), Kathleen S. Kress, MS (a), Samuel Klein, MD (2), Dennis T. Villareal, MD (2,3) 1: Department of Nutrition and Dietetics, Saint Louis University, St. Louis, MO 63104  (b) 2: Division of Geriatrics and Nutritional Science, Washington University School of Medicine, St. Louis, MO 63110 3: Division of Endocrinology, School of Medicine, Saint Louis University, St. Louis, MO 63104 4: Department of Biomedical Laboratory Science, Saint Louis University, St. Louis, Missouri 63104 5: Division of Endocrinology, Diabetes, and Metabolism, Baylor College of Medicine, Houston, Texas 77030

Abstract: We compared the effects of different strategies for weight loss on cardiovascular disease (CVD) risk factors. This relates to the DCHS mission to serve humanity by providing evidence about CVD prevention strategies. Sedentary, overweight adults (45-65y) underwent 7% weight loss by using calorie restriction (CR, n=17), endurance exercise (EX, n=16) or both (CREX, n=19). Changes in risk factors did not differ among groups. For all groups combined, blood pressure decreased (5±1/4±1 mmHg systolic/diastolic, both p<0.001), lipids improved (total cholesterol, -17±4 mg/dL; LDL-cholesterol, -12±3 mg/dL; triglycerides, -18±8 mg/dL; all p<0.05), and fasting glucose (-3±1 mg/dL) and insulin (-2.1 uU/mL) decreased (both p<0.001). Measures of arterial stiffness, C-reactive protein, and HDL-cholesterol did not change. These findings suggest that modest weight loss induced by calorie restriction, exercise, or both cause similar improvements in CVD risk factors. Future research is needed to determine if similar effects are observed in patients who already have CVD.
6. IMPACT OF AN URBAN FOOD AGGREGATOR ON DIVERSITY AND PRICE OF LOCALLY GROWN SPECIALTY CROPS

Author(s): Karen Hudson, MS, RDN; Marjorie Sawicki, MS, RDN, LDN; Patrick Kelly, PhD; Rabia Rahman, MS, RD, LD, Department of Nutrition and Dietetics, DCHS Saint Louis University – St. Louis, Missouri

Abstract: This study relates to the mission and vision of DCHS in that it evaluates the market potential of sourcing locally grown foods to improve access to healthy foods to reduce chronic disease risk in food deserts. Recent studies focusing on the effects of food deserts on nutrition and health status of urban residents have linked the food environment to obesity. The study purpose was to compare diversity and price of locally grown specialty crops listed on an aggregator’s marketing flyers in 2010 and 2014. Comparison of prices against USDA terminal prices was used to evaluate profitability for both the urban food aggregator and the local farmers. Results indicate that there is a market for locally grown specialty crops in urban markets and that there is potential profit for both the urban food aggregator and local farmers. Future research should focus on the impact of urban food aggregators on improved food access, food security and BMI.
7. DOES ATTENDANCE AT AN ADAPTED SPORTS CAMP INCREASE ACTIVITY LEVELS IN CHILDREN WITH CEREBRAL PALSY?

Author(s): Scholtes SA, Saint Louis University, Fischer LM, Saint Louis University, Miros JE, St. Louis Children’s Hospital, Hickey SE, St. Louis Children’s Hospital

Abstract: Children with cerebral palsy (CP) may not be able to attend a traditional sports camp, thus not receiving the physical and social benefits sports camps provide. At an adapted sports camp, children can safely engage in sport activities in a fun, social environment under the supervision of health care providers. It is unknown, however, if children who attend an adapted sports camp experience greater physical activity and thus, might benefit physically. The purpose of this study was to examine activity levels in children with CP who attend an adapted sports camp. This project relates to the Doisy College mission by actively researching the physical and social benefits of an ongoing activity program for children with cerebral palsy. The data from this project has prompted further investigation of the benefits an adapted sports camp.
8. DEVELOPMENT OF A FALLING DROP METHOD TO QUANTIFY HEMOGLOBIN FOR USE IN RESOURCE POOR SETTINGS

Author(s): Monica S. Stumpf, Rahul Sinha, Nikolina Golob, Robert Hoerner, Colin Chen, Tim R. Randolph, Department of Biomedical Laboratory Science, Doisy College of Health Sciences, Saint Louis University

Abstract: Anemia is a global health problem that is particularly prevalent in underdeveloped countries. Many clinical laboratories in underdeveloped countries lack stable electricity, refrigeration, climate control, running water, waste disposal, adequately trained personnel, and funding necessary to implement modern hematology methods to measure hemoglobin and assess anemia. The purpose of this study is to develop a method of hemoglobin measurement involving a drop of blood descending through a copper sulfate column that is inexpensive, simple to perform, and does not require electricity or batteries. Such a method could improve anemia assessment and treatment in resource-poor countries thus improving the quality of life. The method involves the creation of a gravitational column assembly, defining the optimal concentration of copper sulfate, determining the best anticoagulant for blood collection, and development of a procedure to deliver and measure the blood drop descent time. Once the method is optimized it will be correlated to modern methods.
9. IMMUNOHISTOCHEMICAL CHARACTERIZATION OF MULTIPLE SCLEROSIS PLAQUES IN HUMAN BRAIN

Author(s): S. O. Ahmad (1), J. Baun (2), B. Tipton (2), C. Zurhellen(2), C. Segovia (2), R. C. Switzer (1,2), 1: St. Louis University, St. Louis, MO; 2: NeuroScience Associates, Knoxville, TN

Abstract: Multiple Sclerosis (MS) is a demyelinating disease with a complex pathological profile that includes myelin degeneration, neuronal damage, and immune cell infiltration in the areas containing plaques. We evaluated the pathology associated with MS in the brain of a 39 year old female whose cause of death was unrelated to the disease. In acute plaques the amino cupric silver method (de Olmos) revealed a dense core of degenerating nerve cells and fibers. Chronic lesions had little staining of cells or fibers and were devoid of staining by the Nissl counterstain, Neutral Red. Another silver stain, the silver nucleolar stain (AgNOR) was developed to reveal the nucleolar organizing regions in cancerous cells. We utilized the stain here to reveal the differences in interior cellularity between acute and chronic plaques. This is useful in getting accurate counts of the cell populations present in brain regions undergoing demyelination, and has proven to be a useful tool for stereological purposes. Weil-Myelin staining revealed roughly spherical plaques devoid of myelin staining. Nissl staining with Thionine distinguished acute and chronic lesions. Acute lesions appeared to be surrounded by a dense band of cells while the interior of the plaque had a normal distribution of cells. In chronic lesions the core was much lighter suggesting a loss of cells. The Perl’s iron stain revealed a paucity of staining in acute lesions. Chronic lesions were surrounded by iron positive cells, some of which appeared to be phagocytic and filled with debris. Iba-1 immunoreactivity in acute plaques was observed both in the center of the plaque and in a dense ring of immunoreactive microglia surrounding the plaque. In chronic lesions the central immunoreactivity was diminished, but the ring of cells surrounding the plaque appeared thicker and more dense. Staining of near adjacent sets of serial sections reveals the chemoarchitectural differences between acute and chronic states in MS lesions.
10. IMPACT OF SUPER-UTILIZERS ON THE HOSPITAL READMISSIONS REDUCTION PROGRAM (HRRP) USING EMERGENCY DEPARTMENT ADMINISTRATIVE DATA

Author(s): Allison Kunerth, MS, PSM Institute for Biosecurity, Department of Environmental and Occupational Health, College for Public Health and Social Justice, Saint Louis University, Georgia Mueller, MS, Department of Biostatistics, College for Public Health and Social Justice, Saint Louis University, Kendra Ratnapradipa, MSW, Department of Epidemiology, College for Public Health & Social Justice, Saint Louis University, James Austin Turner, MS, CNMT, PET, RT(MR), Department of Medical Imaging and Radiation Therapeutics, Saint Louis University

Abstract: The purpose of this project was to investigate super-utilizers—patients whose healthcare expenditures and claims are disproportionately higher than the general population—and to see if they comprise a significant portion of patients meeting the criteria of the Hospital Readmissions Reduction Program (HRRP). The HRRP aims to reduce readmissions from patients with diagnoses of acute myocardial infarction, heart failure, or pneumonia. Emergency Department data from 2009 to 2011 from Memorial Medical Center in Springfield, IL was used to identify patients seeking treatment for one of the HRRP diagnoses, who had readmissions within 30 days of their initial visit. Consistent with the DCHS Mission, this research can educate healthcare practitioners about the HRRP and super-utilizers, and guide future policies and programs aimed at improving healthcare quality and reducing readmission rates. Our goal is to expand this research with data collected from multiple healthcare centers located in geographically and socioeconomically diverse regions.
11. EFFECTIVENESS OF A WEB-BASED BEHAVIOR MODIFICATION AND EDUCATION PROGRAM

Author(s): Lori A. Jones, MPH, MS, RD, LD, Saint Louis University, Melissa Ramel, MPH, MS, RD, LD, Saint Louis University, Lauren Landfried, MS, RD, LD, Saint Louis University

Abstract: This study explored the use web-based programming to achieve increased knowledge about the importance of physical activity and nutrition on everyday health and to promote increased physical activity in program participants. Participants were invited to engage in a 10-week, web-based program called Small Changes for Health 2014. Participants were asked to baseline their body weight, body mass index (BMI), blood pressure, and blood sugar levels. Participants also completed a pre-survey on current physical activity and knowledge related to physical activity and nutrition. Each week, participants received an e-mail with a suggested physical activity and a requested small change. Physical activity was progressively increased each successive week. Physical activity could also be adjusted based on starting fitness level to accommodate a variety of fitness levels. Additionally each small change supported an increased physical activity level and provided information about how that change contributed to improved health. Participant progress was evaluated by survey prior to starting the program and at the end of the program. Evaluation of weight, BMI, blood sugar and blood pressure by MD exam was recommended prior to starting the program. Participants were asked to recheck those measures at the end to note any changes. At least 1,963 people participated in SCFH 2014. Based on the post-survey, 49% of participants reported themselves as being “active” or “very active” compared to 33% in the pre-survey, a 16% increase. Those who classified themselves as “somewhat active” or “not active” decreased from 67% to 51% from pre-survey to post-survey. There was a 20% increase in those who reported that they felt physical activity was very important to maintaining one’s health. By the end of the program, 67% of participants did aerobic activities at least two times per week (up from 41%), and 61% did strength activities at least two times per week (up from 34%). Additionally, 100% of participants reported that they felt confident in their knowledge about physical activity and nutrition in order to make lifestyle changes. Using a web-based behavior modification and education program may be an acceptable and effective way to reach a broad audience, promote behavior change, and increase knowledge about physical activity, nutrition and health.
12. CASE-CONTROL STUDIES OF VAGINAL AND VULVAR CANCERS AND GYNECOLOGIC SCREENING: A SEER-MEDICARE ANALYSIS

Author(s): Osterbur, Elaina F, Health Sciences and Informatics, Saint Louis University, Saint Louis, MO., Rosenblatt, Karin, Kinesiology and Community Health, University of Illinois Urbana-Champaign, Champaign, IL

Abstract: The objective of the research study was to determine the association between Pap smear and pelvic examination screenings and the development of primary invasive vaginal and vulvar cancers in a Medicare population using a matched case-control design. This study serves the DCHS mission by contributing to gynecological cancer knowledge area through research and collaboration. This study utilized a matched case-control design constructed through the use of the SEER-Medicare database from subjects between the ages of 65 and 100 years old who received care between the years 1991 and 1999. The study identified vaginal (N=328) and vulvar (N=1,103) primary cancer cases. Controls were matched on age and geographical location to vaginal (N=2,624) and vulvar (N=8,825) primary cancer cases. The results suggest the risk of regional/distant histological types of primary invasive vaginal and vulvar cancers was reduced by Pap smear and pelvic examination screenings.
13. INSTRUMENTED TIMED UP AND GO IDENTIFIES MOBILITY IMPAIRMENTS RELATED TO FALL RISK IN PERSONS WITH MULTIPLE SCLEROSIS

Author(s): Alicia Flach - Department of Physical Therapy and Athletic Training, Saint Louis University, Gautam Adusumilli - Department of Neurology, Washington University, St. Louis MO, Robert T. Naismith - Department of Neurology, Washington University, St. Louis, MO, Joanne M. Wagner - Department of Physical Therapy and Athletic Training, Saint Louis University, Acorda Therapeutics, Ardsley, NY

Abstract: Purpose: To determine if specific gait and postural transitions during a Time Up and Go (TUG) test differ between persons with multiple sclerosis (pwMS) based on predicted fall risk. This ongoing project enhances service to humanity by providing insight into the care of pwMS. Further data analysis will contribute to future dissemination of information related to walking and balance in pwMS. There were 98 pwMS who completed 3 trials of a 7 meter Timed Up and Go (TUG) test while wearing body-worn motion sensors that measured gait and postural transitions. PwMS with increased fall risk walked slower, had increased % double support, shorter stride length, slower turning velocity and slower turn to sit peak velocity compared to pwMS without increased fall risk. Interventions for pwMS aimed at improving gait and balance should incorporate speed with walking and turning in order to minimize fall risk.
14. PERSPECTIVES ON HOW TECHNOLOGY CAN ASSIST IN
HEALTH MANAGEMENT OF WORKING BABY BOOMERS


Abstract: The project purpose is to describe the perceptions of working baby boomers’ concerning how health information and communication technologies can help them better manage their health. Six focus groups were conducted with 59 working adults born between 1946 and 1964 who self-identified as wanting to be active in managing their health in online screening survey. Focus groups were held between May and December 2014. Through thematic analysis, the following uses of technology were identified as being helpful to baby boomers in managing their health: 1) improve patient-provider communication, 2) give patients control over sharing their own health information with caregivers and providers, and 3) encourage healthy behaviors and promote self-management. Analysis continues and guidelines will be developed to focus healthcare provider and employer efforts and resources more effectively when acquiring or developing health management and wellness products. This project contributes to the body of knowledge in consumer health informatics.
15. VALIDITY OF THE PALM PALPATION METER IN MEASURING PELVIC TILT

Author(s): Ann M. Hayes, PT, DPT, MHS, OCS, Associate Professor, SLU Department of Physical Therapy & Athletic Training, Howard M. Place, MD, Professor & Vice Chairman, SLU Department of Orthopaedic Surgery, Andrew Hayden, SLU School of Medicine, Jennifer L. Brechbuhler, RN, Clinical Spine Nurse, SLU Department of Orthopaedic Surgery

Abstract: Orthopaedic spine surgeons and physical therapists define pelvic tilt differently and currently there is no gold standard for assessing pelvic position clinically. The purpose of this study is to determine if there is any correlation between pelvic tilt measures taken with the PALM Palpation Meter, a caliper-inclinometer instrument, and those taken radiographically. The study fulfills the education and research legs of the mission of the DCHS, and the vision of the college will be supported when the poster is presented at a national physical therapy meeting in February. The original study is finished, but there are on-going, collaborative projects between individuals in the PT program, the Department of Orthopaedic Surgery, and the SLU School of Medicine, devoted to analyzing and reporting the data. A goal for 2016 is to develop a manuscript to submit for publication, further supporting the vision of the college.
16. HIGH FIDELITY HUMAN SIMULATION USED TO DEVELOP REQUIRED BEHAVIORS IN ACUTE CARE

Author(s): Sebelski CA, Saint Louis University, Department of Physical Therapy and Athletic Training, Levenhagen KM, Saint Louis University, Department of Physical Therapy and Athletic Training

Abstract: Serious medical errors involve miscommunication between healthcare professionals during hand-off resulting in possible delays in treatment or increased length of stay in the hospital. The Situation-Background-Assessment-Recommendation tool is a structured strategy for communication between healthcare professionals. With the inability to guarantee access to all students to an acute care setting, a high fidelity human simulation experience (HFHS) provides a realistic engaging interaction for skill development. The purposes of this collaboration with SLU SON: prepare students to perform hand off communication; assess changes in student’s self-efficacy in communication; and reflect on their ability to synthesize emerging data. HFHS provide a safe low penalty environment to practice skills of safety, clinical decision making, and communication to team members. This study was unique in the use of HFHS with interprofessional communication via a recognized strategy. This ongoing project is interwoven within the PT curricula with plans of increased interaction with SON and HFHS.
17. CHEMORESISTANCE-INDUCED EPITHELIAL-MESENCHYMAL TRANSITION OF A COLORECTAL CANCER CELL LINE

Author(s): Alice M Martino¹, KayKay San¹, Nalini Daniel² and Uthayashanker Ezekiel¹. ¹: Department of Biomedical Laboratory Science, Saint Louis University, St. Louis, MO, United States and ²: Department of Medical Imaging and Radiation Therapeutics, Saint Louis University, St. Louis, MO, United States.

Abstract: Transdifferentiation of epithelial cells to mesenchymal cells is called epithelial-mesenchymal transition (EMT). EMT is a normal process during embryogenesis, where epithelial cells lose their characteristics and become more motile mesenchymal cells. Invasive and metastatic characteristics of carcinoma cells in primary tumors are mediated by EMT. Specifically, the primary tumor loses cell-cell adhesion normally mediated by E-cadherin and attains mesenchymal markers such as vimentin. Also, transitioning cells attain increased intercellular separation and elongated shape with pseudopodia. Studies have shown that chemotherapy and radiation therapy lead to formation of resistant cells by transdifferentiation into EMT. To study chemoresistance-induced EMT, colon cancer (DLD-1) cells were treated with increasing concentrations of oxaliplatin (an anti-cancer drug used to treat metastasized colon cancer) to develop a chemo-resistant cell line (DLD-1 OxR). These resistant cells show properties of EMT by morphologic and cell migration measures. Previously, we showed that curcumin, a phytochemical derived from turmeric, inhibited DLD-1 proliferation: its effect on DLD-1 OxR suggests inhibition as well. Future studies of DLD-1 OxR will include characterization of mesenchymal marker expression.
18. EXPANDING THE CIRCLE: IMPLEMENTATION OF AN ADVOCACY PROGRAM TO INCREASE PHYSICIAN ASSISTANT (PA) STUDENT CLINICAL SITE PLACEMENT IN RURAL MISSOURI

Author(s): Genevieve DelRosario¹, Jennifer Storm¹, Carol Danter¹, Holli Paulk², Patrick Kelly¹, Chris Werner¹, Kim Lewis¹ ¹: Saint Louis University; ²: University of Missouri – Kansas City

Abstract: PA programs encounter two significant barriers in obtaining clinical sites. First is failure of programs to develop new sites, and second is ever-increasing competition. This grant attempts to ameliorate these issues through inter-program advocacy. Faculty from SLU and the University of Missouri – Kansas City will modify an existing PA marketing presentation to use in visits to advocate for the placement of PA students in smaller towns and rural areas that have not offered PA clerkships. Our research question is to determine if this is an effective tool to increase rural clerkships in Missouri. This baseline data will pave the way for future research focusing on determining if the increased use of rural clerkships is correlated to an increase of practicing PAs in those areas, and evaluate their impact on healthcare access for all Missourians. This funded grant meets the DCHS mission of serving humanity through state-wide clinical education and engagement.
19. THE PHYSICIAN ASSISTANT (PA) ALCOHOL EDUCATION AND SBIRT TRAINING PROGRAM IN MISSOURI

Author(s): Leigh Tenkku Lepper, PhD, University of Missouri-Columbia, Genevieve Del Rosario, MHS, PA-C, Saint Louis University, Katherine Ervie, MPAS, PA-C, University of Missouri-Kansas City, Tracy Cleveland, PA-C, Missouri State University

Abstract: Fitting well with the Doisy College of Health Sciences mission of serving humanity through education, research and engagement, this project seeks to design and implement a web-based alcohol education and Screening Brief Intervention Referral and Treatment (SBIRT) curriculum for the three Missouri PA programs, the Missouri Academy for Physician Assistants (MOAPA) and the Physician Assistants in Pediatrics (SPAP). The web-based training will operate within either a videoconferencing platform or a virtual world platform with avatar encounters. The curricula include both didactic and experiential training modules set within a pre-existing course offering. Regional trainings will also be held in the three largest metropolitan areas in Missouri where the training will be implemented with local clinical and hospital settings. The project began with funding from SAMHSA on October 1, 2015 and will run through September 30, 2018. The Principal Investigator is Dr. Leigh Tenkku Lepper at the University of Missouri.
20. IDENTIFYING OCCUPATIONAL STRESSORS TO INFORM WORKPLACE HEALTH PROGRAMS FOR JAIL CORRECTIONS OFFICERS IN EASTERN MISSOURI

Author(s): Lisa Jaegers, PhD, OTR/L (1), Monica Matthieu, PhD (2), Ellen Barnidge, PhD, MPH (3), Omar Ahmad, OTD, PhD (1), Greg Scheetz (2), Rebecca Dick (4), Saketh Nadimpalli (4) Patrick Kelly, PhD (5).


Abstract: Background: In support of national calls to reduce occupational stressors affecting corrections personnel, we implemented Phase I of a Total Worker Health (TWH) study to develop tailored corrections officer (CO) health interventions. This study is influenced by the DCHS mission to serve humanity by exploring COs workplace and health-related concerns. We will present the methods for our overall study and preliminary findings from Phase I of our needs assessment. Phase I of this study involved the formation of community-based participatory research teams at one urban and two rural jails to perform needs assessments through surveys of COs. Participatory teams were motivated and actively engaged in the needs assessment. Approximately 80% of COs employed at each site completed a survey (N=357). Phase II of this study will be informed by these survey results to develop focus group questions for subgroups of COs and to create recommendations for workplace health interventions.
21. MEDIAL TIBIAL STRESS SYNDROME IN ACTIVE INDIVIDUALS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RISK FACTORS

Author(s): Mark F. Reinking, School of Physical Therapy, Regis University, Denver, CO, Tricia M. Austin, Program in Physical Therapy, Saint Louis University, St. Louis, MO, Randy R. Richter, Program in Physical Therapy, Saint Louis University, St. Louis, MO, Mary M. Krieger, Medical Center Library, Saint Louis University, St. Louis, MO

Abstract: This systematic review summarizes research of risk factors for medial tibial stress syndrome (MTSS). MTSS is exercise related lower leg pain that may interfere with activity. By systematically searching for and summarizing past research on risk factors for MTSS, prevention measures and treatments may be identified that reduce the impact of MTSS. Bibliographic databases, journals, and publisher websites were systematically searched. Predetermined criteria were used to screen articles. Twenty two articles met criteria, included data on risk factors, and were assessed for study quality. Meta-analysis, a statistical technique, was used to combine results from individual articles. Of 27 identified risk factors, 5 (female sex, higher weight, higher navicular drop [an indication of a “flat foot”], previous running injury, and greater hip external rotation with the hip in flexion) were statistically significant and may contribute to the development of MTSS. A systematic review of interventions for MTSS is planned.
22. KNOWLEDGE AND DEMONSTRATION OF KEY CONCEPTS FOLLOWING ONE MOVEMENT PATTERN TRAINING SESSION IN FEMALES WITH PATELLOFEMORAL PAIN

Author(s): B. Yemm, Physical Therapy, Doisy College of Health Sciences, Saint Louis University, A. DiStaulo, Physical Therapy, Doisy College of Health Sciences, Saint Louis University, LR. Van Dillen, Physical Therapy, Department of Orthopaedic Surgery, Washington University School of Medicine, Saint Louis, MO, CE. Lang, Physical Therapy, Occupational Therapy, Department of Neurology, Washington University School of Medicine, Saint Louis, MO, GB. Salsich, Physical Therapy, Doisy College of Health Sciences, Saint Louis University, Saint Louis, MO

Abstract: In alignment with the DCHS mission to serve humanity through education, research and engagement, this study sought to determine if females with chronic knee pain who were enrolled in a movement training treatment program could demonstrate knowledge and correct performance of key movement concepts at the second treatment visit. Knee angles during a squat task were obtained prior to the initial visit, when key movement concepts were taught, and compared to knee angles obtained at the start of the second visit. Subjects demonstrated knowledge of key movement concepts and decreased knee angles (improved movement) at the second visit. For interventions to yield positive outcomes patients must adhere to the program as prescribed. Two necessary elements are the patient’s knowledge of what they are supposed to do and the ability to perform the program as prescribed. Females with PFP demonstrated both elements, and thus, may benefit from movement pattern training.
23. FEASIBILITY AND ACCEPTABILITY OF A TASK-SPECIFIC MOVEMENT PATTERN TRAINING PROGRAM FOR TREATMENT OF PATELLOFEMORAL PAIN

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Abstract: This study examined the feasibility and acceptability of an innovative treatment approach for patellofemoral pain (PFP), task-specific movement pattern training. The 6-week program consisted of supervised practice of functional tasks, performed with optimal limb alignment. Participants were instructed to incorporate key movement concepts into their daily activities. Feasibility outcomes included recruitment (goal: n=25), retention (goal: 85%), and adherence (self-reported daily average; goal: 75%). Treatment acceptability was assessed using a questionnaire. Pain (maximum: past week) was assessed with a visual analog scale before and after treatment. Twenty-five females with PFP were enrolled. To date, 92% have been retained. Average self-reported daily adherence was 79%. Treatment acceptability (percent improvement that participants thought they would achieve) was 79%. Pain was decreased 72% after treatment. Task-specific movement pattern training is feasible, acceptable, and may result in decreased pain. This treatment approach has potential to serve humanity by improving health outcomes. This project was supported by the NIH/National Center for Advancing Translational Sciences (NCATS) grant UL1 TR000448, Washington University, Institute for Clinical and Translational Sciences CTSA #705 and the Orthopaedic Section of the American Physical Therapy Association
24. QUANTIFYING BIOMECHANICAL FORCES AND BONE STRENGTH TO ESTIMATE FRACTURE RISK IN DIABETES

Author(s): (1) David J. Gutekunst, PhD, Saint Louis University Program in Physical Therapy. (2) David R. Sinacore, PT, PhD, FAPTA, Washington University Program in Physical Therapy.

Abstract: People with diabetes have increased risk of foot fractures. Fractures occur because of an imbalance between biomechanical forces and a bone’s strength. This study’s purpose was to compare biomechanical forces and bone strength in people with diabetes compared to healthy controls. We recruited 20 people with diabetes and 16 non-diabetic controls, and used computed tomography (CT) to estimate bone strength in the metatarsal bones. Participants walked barefoot across a pressure platform, allowing us to compute the forces on metatarsal bones. Participants with diabetes had lower bone strength and higher bending forces in their metatarsal bones. This information has the potential to serve humanity by identifying prevention and treatment strategies to reduce fracture risk and improve patient outcomes. Research is ongoing: we are investigating whether CT can be replaced by less expensive, non-radiating tests, and the relationship between our measures and real-world fracture incidence.
25. PREDICTORS OF SOCIAL SKILLS AND PROBLEM BEHAVIORS IN HOMELESS AND LOW-INCOME HOUSED PRESCHOOL CHILDREN

Author(s): Debra Rybski, PhD, MSHCA, OTR/L, Doisy College of Health Sciences, Department of Occupational Science and Occupational Therapy

Abstract: There are 2.5 million U.S children who experience homelessness with up to 26% of preschoolers exhibiting challenging behaviors which can impair social/school performance and later life/work skills. Poor sensory processing can impede self-regulation and is greater in poor children. Homeless mothers exhibit higher rates of abuse/mental illness which may impact parenting and mediate children’s behavior. A 2010 Federal call to study the health and behavior in homeless children directed this research of preschooler’s social development/participation. The purpose of this study was to investigate child sensory processing, parenting, and housing as predictors of social skills and problem behaviors in 91 homeless and low-income housed children. Results support justice informed community–built early intervention models to enhance child self-regulation, social participation and learning. This work emanates from the DCHS mission to serve humanity through research. It informs future development of health promoting interventions to support young children who face adverse life experiences thrive and succeed.
26. KINETICS OF BIOFILM FORMATION BY STAPHYLOCOCCUS AUREUS AND PSEUDOMONAS AERUGINOSA

Author(s): Timothy D. Zellmer, Rita M. Heuertz. Department of Biomedical Laboratory Science, Saint Louis University, St. Louis, MO,

Abstract: Biofilms have been implicated in increasing antimicrobial resistance and infections that are chronic or medical device-associated. This study focused on assessment of biofilm formation by S. aureus (MRSA, methicillin-resistant; MSSA, methicillin susceptible) and P. aeruginosa in a kinetic manner. A microplate assay allowed for quantitative assessment of biofilm. Results indicated that MRSA and MSSA produced different amounts of biofilm (with MRSA producing twice as much) but had similar timing of biofilm kinetics. P. aeruginosa produced less biofilm than MRSA but as much as MSSA. Results suggested that some P. aeruginosa were delayed biofilm producers indicating kinetic diversity that contrasted with striking similarity of S. aureus strains. Financial support for TDZ was received from the DeNardo Education and Research Foundation.
27. CINNAMALDEHYDE INHIBITS BIOFILM FORMATION OF MRSA

Author(s): Marco W. Rossi, Rita M. Heuertz., Department of Biomedical Laboratory Science, Saint Louis University, St. Louis, MO

Abstract: NIH identified that 80% of chronic infections are caused by biofilm-producing bacteria and biofilm is a contributory component to antimicrobial resistance. Many plant-derived compounds are antibacterial, such as cinnamaldehyde (derived from cinnamon), but no biofilm studies have been reported. Staphylococcus aureus (MRSA, methicillin-resistant) is known for its antimicrobial resistance thereby making it an important pathogen to assess for inhibition by plant-derived compounds. Biofilm assays and colony counts were performed to screen for growth and biofilm inhibitory effects. Results indicated that cinnamaldehyde inhibited MRSA biofilm formation and colony count number. Given that cinnamaldehyde has no reported human toxicity, potential impact is reduction of significant morbidity and mortality due to MRSA infection. Financial support for MWR was received from the DeNardo Education and Research Foundation.
28. A SIMPLE AND INEXPENSIVE METHOD TO INDUCE INTRACELLULAR HEMOGLOBIN C CRYSTAL FORMATION TO DIAGNOSE HBC DISEASE FOR RESOURCE-POOR COUNTRIES.

Author(s): Chiemeziem Ohiri, Kemdi Egekeze, Tim R. Randolph, Department of Biomedical Laboratory Science, Doisy College of Health Science, Saint Louis University

Abstract: The purpose of the project is to develop a diagnostic method to identify hemoglobin C (HbC) that is simple, reliable, and inexpensive. HbC is the second most common hemoglobinopathy worldwide behind sickle cell (HbS). HbC disease causes mild anemia but when inherited with HbS produces a life-threatening condition nearly as severe as sickle cell. HbC and HbS affect similar populations and are most prevalent in Africa, across the Caribbean, and many parts of India. Current diagnostic methods are too complex and expensive for use in underdeveloped countries causing patients to go undiagnosed and untreated. We have completed proof of concept experiments and are now working to optimize the method by manipulating salt types, salt concentration and incubation time and temperature. Once optimized, we will determine if the method can be used to differentiate HbC carriers (HbAC), from disease (HbCC), and from patients who inherit both HbC and sickle cell (HbSC).