

**2015 TOURO COLLEGE 4TH ANNUAL RESEARCH DAY
ABSTRACTS**

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ART

Art01: Seidenberg, R.

Picturing Purim: Script and Image

Abstract: The Megillat Esther is one of the great dramas from the Tanach. Outside of the story of Moses in the Pentateuch, where we witness his birth, rise to power as the liberator of the Bnei Yisrael from Egypt to his death, the story of Mordechai and Esther in the Persia is full of excitement, palace intrigues, murderous plots and ultimate salvation. Depictions of Esther and the Purim story have existed from Late Antiquity to the present. Various chapters have received attention on the walls of an ancient synagogue at Dura Europas, c. 254 CE, to illuminated haggadahs and medieval bibles to Renaissance and Baroque paintings, musical scores and Hollywood movies. Each of these representations were interpreted from different religious and cultural influences. This paper will look at the Jewish and Christian interpretations of Megillat Esther in Golden Age of 17th century Holland. The setting is Amsterdam, the then-cosmopolitan city of refuge for Sephardic Marranos seeking religious freedom. The Purim story was the perfect narrative for the Diaspora Jew, in general and the Marranos, in particular. The Illuminated megillahs, the paintings of Rembrandt and his followers, and poem of Marrano poet, Joao Pinto Delgado present different views of Megillat Esther. The questions are around the methods of interpretation. Were the artists knowledgeable of the written religious texts and how did culture influence choice of subject?

Art02: Grenadir, A.

The Conscious Community

Abstract: My series of original acrylic paintings titled "Conscious Community" was inspired by the writings of R. Kalonymus Kalman Shapira, who devoted his last years in pre-Holocaust Poland uplifting the broken spirits of the Jews of the Warsaw Ghetto. R. Shapira envisioned and created a "conscious community," an assembly of people following his teachings, united in their common goal to live with positive thoughts and actions. The goal of this alliance was to see beyond the mundane world and allow their spiritual sensibilities to guide them. He had the foresight to bury his manuscripts shortly before the Ghetto's liquidation. It was his hope that others would benefit from the holy legacy he left behind. This spiritual treasure was found after the war among the ruins. Many of my paintings in this series have white spots in the lower portion of the canvases. This represents the spiritual lights emanating from the members of this community, emerging from the darkness of the Holocaust. My stain technique, using soft-edge color washes, is juxtaposed to the parallel hard-edged bands of pure hue. The push and pull throughout the surface of the canvas reflects the inner conflicts between the emotions and the intellect. The higher synthesis of body and soul emerges from the depths of the struggle. My goal in these paintings - to create a meditative space for reflection and transcendence – is aligned with R. Shapira's goal for a better world, a conscious world, a world with mindfulness and peace.

BIOLOGY

Bio01: Kahn, B. and Feldman, H.R., and Horowitz, L.

A Freshwater Community on the Shawangunk Ridge on the Lower mid-Hudson

Abstract: The Shawangunk Ridge in the lower mid-Hudson Valley extends from the vicinity of Rosendale through New Jersey, Pennsylvania, Maryland and Virginia. Within the first thirty miles can be found five "sky lakes": Mohonk, Minnewaska, Awosting, Mud Pond and Maratanza. Since these lakes occur on the top of the ridge they have no drainage basin. Here we report on the pH and other abiotic factors that impact the aquatic fauna of the Lily Pond (pH 6.58), a small, shallow body of water with a diverse faunal community on the grounds of Mohonk Mountain House. The pH of Mohonk Lake is 7 near the surface. Lake Minnewaska's pH increased from 4 to 6 in the last twenty years.

The pH of the other three sky lakes (pH=4) may be influenced by acid seeps, reactivation of faults permitting acidic water to migrate into the lakes, or a decrease in the buffering capacity of the underlying Martinsburg Formation. Thirteen taxa of aquatic insects inhabit the Lily Pond along with three invertebrate (Hirudinea, Isopoda, Arachnida) and six vertebrate taxa with a diversity index of 17.45. One of the most abundantly represented insect groups found in the Lily Pond, the Notonectidae, have been observed to prefer environments between a pH of 6 and 7.1, possibly precluding their presence from the more acidic sky lakes. A similar preference is supposed in other species

Bio02: Chincholker, D.

Effects of Smoking on the Voice: Literature Review

Abstract: Surgeon General's Report on Health Promotion and Disease Prevention stated that "cigarette smoking is clearly the largest single preventable cause of illness and premature death in the United States". Smoking's harm on the voice has many effects which are insufficiently researched. These effects can be dependent upon the duration of smoking habits. As medical and technological tools advance, the effects become more apparent, especially in terms of voice parameters in both men and women. Several studies confirm a significant relationship between edema, erythema, abnormal laryngeal color, abnormal phase symmetry, glottal gap size and smoking, suggesting that even relatively short-term smoking has an effect on laryngeal anatomy and vocal fold physiology. We have found that different effects of smoking on the voice can be classified into two subgroups: direct effects and indirect effects. Indirect effects include epidemiologically significant nosology such as stroke and thyroid goiter. The literature demonstrates that direct effects cause pathology such as Reineke's edema, erythema, benign and malignant tumors etc. Furthermore, we did not find any data about indirect effects having significant influence on the speech function, including voice. We conclude that indirect influences play a notable role in speech pathology and requires further study.

Bio03: Farkas, P., Yefimenko, O., Konig, J., Morrison, Y.E., Begum, K., Dickey, C. and Schiftenbauer, M.

The Antiviral Effect of Cinnamon Extract

Abstract: Background: Cinnamon extract, a natural botanic extract, has been shown to have an antiviral effect on bacteriophages of gram-negative bacteria. Saigon Cinnamon and Ceylon cinnamon (from the species *Cinnamomum verum* and *Cinnamomum loureiroi* respectively) are very effective antiviral agents. Excluding white tea, other natural botanic extracts that we tested had no antiviral effect. Cinnamon extract inactivates bacteriophages T1, T2, T3, T4, T5, T6, T7, and Φ x174. Φ x174, unlike the other phages, has no tail. Methods: Cinnamon extract was prepared by dissolving 5g of ground cinnamon in 50mL of water. The extract was added to the bacteriophages (i.e., T1, T2, T3, T4, T5, T6, T7, and Φ x174) at room temperature (25°C) for 10 minutes with intermittent mixing. 0.1 ml of the phage/cinnamon mixture was added to 5 ml of overlay agar along with 0.3 ml of the respective bacteria (i.e., E. coli B or C) and then poured over a TSA plate and allowed to solidify. The plaques formed were counted after 24 hours of incubation at 37°C. Each experiment was repeated a minimum of three times. Experimental results were compared to a positive control of sterile water in place of the cinnamon extract. Results: The cinnamon extracts were both extremely effective as an antiviral agent. In contrast, other extracts we tested (i.e., onion, garlic, peppermint, cloves, citron pulp, lychee, cocoa, dark chocolate, and Spanish saffron) had no antiviral effect. In most cases 99.9% inactivation was achieved. In some cases total inactivation was obtained. In all cases Ceylon cinnamon was more effective than Saigon cinnamon. Removing the cinnamon particles, using a micro filter, had no effect on the efficacy of the extract. Conclusion: Cinnamon extract is a powerful antiviral agent. Whereas white tea and white tea polyphenols inactivate viruses and destroy bacteria, cinnamon extract had no antibacterial effect. Based on previous electron microscopy images we posit that the inactivation of the virus is due to degradation of the viral capsid. Although, the inactivation of the viruses was conducted with bacteriophages (a model system), our results suggest that cinnamon extract may have an antiviral effect on human pathogenic viruses. The inactivation of bacteriophage Φ x174, which is similar to tailless animal viruses, justifies this belief.

Bio04: Dautaj, E., Gjeci, S., Narayanan, N., and Hannan, F.

Effect of Sound on Appetitive and Aversive Conditioning in Fruit Flies

Abstract: Associative learning and memory tasks critically depend on simultaneous activation of multiple sensory pathways. Such tasks are very sensitive to context, including location, color, time of day and temperature. In humans it is well known that sound can trigger recall of past events, and it has been shown that sound can enhance or interfere with word recall tasks and working memory, and that ultrasound can affect cortical activity. The fruit fly, *Drosophila melanogaster*, has been employed extensively for studies of learning and memory, using classical and operant conditioning tasks. Sound is also an important environmental stimulus in flies. Male flies “serenade” females during courtship by flapping one wing. Males also “yell” at each other with dual wing flicks during fights. We have observed that both pleasant and agonistic sounds can interfere with a reward based olfactory association task that pairs sucrose with odors. The same sounds, however, do not affect an aversive olfactory association task that pairs electric shock with odors. It is well known that different circuitry and neurotransmitters are involved in aversive versus appetitive conditioning, however there are also operational differences in the learning protocols that may interfere with exposure to sound. Future studies include developing an aversive conditioning protocol using bitter tastants, to better simulate the appetitive task, and to assay the effect of sound on appetitive long-term memory. Ultimately, we would like to identify neural circuits and biochemical pathways involved in integrating sound context with learning and memory, using the powerful genetic tools available for *Drosophila*.

Bio05: Chicas, M., Taylor, D., Park, S.Y., Narayanan, N., and Hannan F.

Mutations Affecting Microtubule Function Cause Hearing Loss in Fruit Flies

Abstract: Many developmental, structural and functional similarities exist between the auditory systems of mammals and the fruit fly *Drosophila melanogaster*. Studies using the fruit fly should provide general insight into mechanisms of both hearing and mechanosensation. Ultimately this may lead to better therapies for human hearing and balance disorders. The auditory organ of the fruit fly *Drosophila melanogaster*, called Johnston’s Organ (JO), consists of an array of ~400 mechanosensory neurons housed in the flies’ second antennal segment. Each mechanosensory unit contains 2-3 ciliated neurons whose dendrites are surrounded by rigid, actin filled scolopale cells. We present substantial data showing hearing loss and dramatic disruption of microtubule networks in the JO neurons of flies with mutations affecting the *diaphanous*, *NF2/merlin* and *expanded* genes. The DIA, NF2/MER and EX proteins are all well-known actin binding partners however, the actin cytoskeleton in the scolopale cells is substantially unaffected. Furthermore, knockout or overexpression of these genes ONLY in the JO neurons is sufficient to cause hearing loss AND results in the disruption of microtubule networks. We hypothesize that DIA, NF2/MER and EX proteins are critical for the development and/or maintenance of microtubule networks in JO neuron dendrites. We further hypothesize that other genes involved in HIPPO or Receptor Tyrosine Kinase (RTK) signaling pathways will also affect hearing and JO microtubule networks. A long-term objective of our research is to define the role of microtubules in mechanosensory neurons, and to understand the effect of disruption of microtubule networks on mechanosensory processes such as hearing.

Bio06: Adams, T.H., Ahmed, I., Aden, U., and Li, H.

Neurodevelopmental Effects of Caffeine on Premature Brains

Abstract: Apnea of prematurity (AOP), defined as cessation of breathing for over 20 seconds, is commonly seen in preterm infants. Caffeine is widely used to treat AOP because of its effectiveness and safety. During AOP, the respiratory drive is suppressed by binding of the neurotransmitter adenosine to A1 and A2 receptors. Caffeine removes the inhibitory effects of adenosine by competing for the binding sites of A1 and A2 receptors. Caffeine has long been known as a psychostimulant in adult brains, but its effect on developing brains, e.g. following AOP treatment, remains unclear. We first sought to ask 1) whether neonatal brains express A1 and A2 receptors and 2) how these receptors are modulated in response to prolonged caffeine treatment. Using immunostaining and confocal microscopy, we found A1 and A2 receptors are differentially expressed in rodent neonatal brains; A1 receptors are synaptically localized whereas A2 receptors are primarily enriched in soma. Moreover, our preliminary data, using

RT/PCR, showed that caffeine down-regulates the expression of both A1 and A2 receptors. We are currently investigating the underlying mechanisms of down-regulating the expression of A1 and A2 receptors and its consequences in the neurodevelopment of rodent neonatal brains.

Bio07: Stauber, J., Vaserman, G., Dembitzer, H., Levitman, A.D., and Chiswell, B.P.

Characterization of ILKAP in Integrin Signaling Pathways

Abstract: Cancer, cardiovascular disease, rheumatoid arthritis, psoriasis, and developmental disorders can all be linked to aberrant integrin signaling. Integrins are transmembrane proteins that bind to intracellular proteins propagating signals to the nucleus for gene regulation and subsequent control of cell survival, growth, proliferation, motility, spreading and migration. Integrin-linked kinase (ILK) is a central hub in integrin signaling pathways and is thought to interact directly with integrins. ILK interacts with a previously unidentified phosphatase, subsequently named integrin-linked kinase-associated phosphatase (ILKAP). ILKAP regulates cell survival and apoptosis through its interaction with apoptosis signal-regulating kinase 1 (ASK1) in the cytoplasm. In the nucleus, ILKAP interacts with ribosomal protein S6 kinase-2 (RSK2) and induces apoptosis. Consistent with these findings, low transcription levels of ILKAP are found in melanoma cells. Although ILKAP substrates have been identified in the cytoplasm and the nucleus, the mechanism of dephosphorylation remains unknown and the consensus substrate sequence for ILKAP requires further investigation. Our hypothesis is that ILKAP-protein interactions play an essential role in regulating integrin signaling pathways. The first aim is to identify the binding sites of ILK, RSK2, and ASK1 on ILKAP, and we will conduct binding assays and co-crystallization trials using purified proteins. The second aim is to determine the enzymatic mechanism of ILKAP and the role of regulatory subunits in its activity, we will perform phosphatase assays and X-ray crystallography studies. Preliminary crystallization trials with partially purified ILKAP constructs are currently underway.

Bio08: Degenhardt, K., Balagot, K., Choi, C., Duque, A., Gomez, C., and Malhotra-Gupta, G.

Inhibition of Carcinogen-Mediated Transformation by Bowman-Birk Inhibitor

Abstract: Proper removal of protein is required for normal cell viability and function. Cellular functions such as lysosomal degradation, proteosomal degradation and intracellular signaling cascades are mediated by proteolysis, and misregulation of these proteolytic functions results in carcinogenic activity. One of the overt differences between a normal cell and a transformed cell is enhanced proteolytic activity in the cancer cell. The carcinogens in chewing tobacco can result in oral cancer by causing normal cells to transform into cancerous cells. Soy compounds have been shown to exert anti-carcinogenic effects on hormone-dependent cancers by acting as a protease inhibitor. Cancer rates vary from country to country and have been attributed, at least in part to differences in dietary intake. In fact, the lower rate of breast, colon and prostate cancer in countries like China and Japan has been attributed to their dietary intake of soy products. In addition, these compounds are non-toxic, affordable, and can be incorporated orally into the diet as they are resistant to temperature and acidic conditions, making them a prime candidate for a novel cancer therapy. The Bowman-Birk protease inhibitor, a soybean-derived serine protease inhibitor, was found to suppress in-vitro transformation and in-vivo carcinogenesis by the main carcinogen found in cigarette smoke by 40-60%. Our study examines the role of the Bowman-Birk protease inhibitor on the transformation of BALB/c 3T3 fibroblast cells caused by NNN and NNK carcinogens from chewing tobacco, and its potential in reducing the risk of tumor initiation.

Bio09: Malek, A., Gibbons, M., Kraszewski, A., Backus, S., Hillstrom, H., Fealy, S., and Kontaxis, A.

The Effect of Shoulder Kinematics on Pitch Velocity and Accuracy in High School Softball Pitchers

Abstract: Softball is one of the fastest growing sports for women at the high school and collegiate levels (Plummer 1996). There is limited published data that describes full 3D kinematic variables in the softball pitcher. Most studies report kinematic variables as they relate to injury. To the author's knowledge there are no publications reporting kinematic data as it correlates to performance. The objective of this study is to relate glenohumeral joint (GHJ) angle and velocity to ball speed and accuracy (balls/strikes) in high school softball pitchers. A total of 12 pitchers, without history of shoulder pain or injury, were recruited to participate in this study. This is an ongoing investigation and for this study only 7 pitchers were reported. This project received institutional IRB approval. Motion analysis software and radar guns were used to measure kinematics and ball speed respectively. Strike percentage was $37.1\% \pm 12.1$ and ball speed averaged 58.1 ± 5.3 mph. The mean GHJ rotation angle and velocity was $22.6^\circ \pm 11.0$ and 602.1 %/s ± 203.1 respectively. No correlation was found between ball velocity and accuracy. Knowledge of this data can assist young athletes to optimize their technique and develop into effective pitchers.

Bio10: Narayanan, N. and Sturtz, R.

A Review of Factors for Success in the STEM Curricula

Abstract: The importance of the STEM (Science, Technology, Engineering and Mathematics) professions to America's ability to advance our quality of life has long been a matter of discussion on a national stage. The rewards of study in these areas are as evident to those who teach it as they are, many times, hard for students to appreciate, at least in the short term. This review of the literature seeks to delineate evidence-based factors relating to student success in the STEM concentrations on the post-secondary level. High school preparation and competence in mathematics are major issues. Personal and psychological traits also contribute to student success. The article concludes with suggestions for curricular and pedagogical approaches to address these issues. Getting an undergraduate degree in science by nature is very demanding, and can be overwhelming to some. We have presented some recommendations and intervention strategies that we believe would highly benefit educators, college admission committees and students, and pave the way for a new generation of STEM professionals.

Bio11: Joseph, T.W., DeCastro, M., Martin, C., Bett, S., and Romano, C.

The Role of Novel Glycosidic Analogues in Suppressing the Glycolytic Pathway and Retarding Tumor Progression

Due to the current limitations of cancer chemotherapy, there has been increased interest in revisiting glycolysis to determine whether tumors could be killed by energy deprivation rather than solely by strategies to inhibit proliferation. The vast majority of cancers have an enhanced glycolytic up-regulation due to increased energy demands of transformed cells. Cancer cells exhibit a uniquely high rate of glucose utilization, converting glucose into lactate. The export of lactate subsequently creates an acidic extracellular environment that is thought to promote invasion and metastasis. Even in the presence of adequate oxygen supply, transformed cells would prefer an anaerobic environment to proliferate. This phenomenon is well known as the Warburg effect. During glycolysis targeting isoforms of phosphofructokinase may afford the greatest opportunity to deprive cancer cells from essential energy and substrates for macromolecular synthesis for proliferation, while allowing normal cells to survive. While prospects for monotherapy with glycolytic inhibitors are poor, combination therapy may be more efficacious. We have focused our research in the chemical synthesis and evaluation of benzyl protected glycosyl amides and N-glycooxazolines as potential PFK inhibitors. Preliminary experiments have shown these compounds can efficaciously induce cell death and senescence in Hela, MCF-7 and MDA-231 cancer cell lines at $1.0 \mu\text{M}$ concentration. We are currently investigating the mode of action of these compounds and we hope their efficacy is due to their ability to down regulate phosphofructokinase in the glycolytic pathway.

Bio12: Groden, M.

Amyotrophic Lateral Sclerosis (ALS) and Spinal Muscular Atrophy (SMA): A Genetic Linkage?

Abstract: Neurodegenerative motor neuron disorders (MNDs) have devastating effects. Spinal Muscular Atrophy (SMA), for example, is a debilitating and sometimes lethal disease in children. SMA is monogenic, autosomal recessively inherited disorder caused by a loss-of-function mutation of surviving motor neuron 1 (SMN1). Previous clinical trials for this disease have not produced consistent results. However, in a recent cross-sectional study, biomarkers for SMA, protein candidates and metabolite markers were identified. These markers can be used for: clinical assessment, identification of molecular pathways, and may guide response to treatment. Clinical trials of amyotrophic lateral sclerosis (ALS), another motor neuron disorder, have been uniformly disappointing without the benefit of a full understanding of ALS's mechanisms. Numerous theories attempt to explain ALS's selectivity for motor neuron degeneration, but none are conclusive. One hypothesis, gem depletion, emerges from the studies of superoxide dismutase 1 transgenic mice that have been discovered to contain low levels of SMN, thereby potentially linking SMA and ALS. Furthermore, SMN1 and SMN2 are seen as risk factors for ALS. Biomarker identification may also help in identifying ALS's pathogenesis and pathophysiology as it has begun to do for SMA. ALS and SMA may be more similar than previously thought. Both MNDs may interact in a variety of genetic and mechanistic pathways unknown at present. If so, this may serve to link seemingly disparate crippling diseases, and thereby promote efforts by government agencies and pharmaceutical companies to pursue research and development for these "orphan" diseases.

Bio13: Traube, I., Shetye, P., Cutting, C., and Grayson, B.

Treatment Effect of Nasoalveolar Molding (NAM) on Maxillary Arch Morphology in Patients with Bilateral Cleft Lip and Palate

Abstract: Cleft lip and palate (CLP) is one of the most common congenital defects. The purpose of this study is to describe the morphologic changes in maxillary alveolar dimensions in children with nonsyndromic complete bilateral CLP following nasoalveolar molding (NAM). The sample consisted of 23 infants with nonsyndromic complete BCLP whose records contained complete sets of plaster casts of the maxillary arch and premaxilla. Pre and post treatment casts were digitized and linear dimensional analysis was used to measure distances between 9 anatomical landmarks as well as changes between time points. Study models will be analyzed to determine if vertical position of the premaxilla is controlled. NAM data (including vertical position of the premaxilla) will be matched and compared to maxillary arch data from an age matched noncleft sample. Statistically significant reduction in cleft width was observed both on the right side (mean=5.29 mm; max=12.69) and the left side (mean=6.73 mm; max = 14.69). Premaxillary position was observed to retract on the right side (mean=3.98 mm) and the left side (mean=3.37 mm). The majority (n=19) exhibited asymmetry and rotation of the premaxillary position. There was a slight reduction in intercanine point width (mean=2.51 mm) and an increase in tuberosity width (mean=2.02 mm). NAM treatment is shown to significantly reduce cleft width in all patients studied while asymmetry and rotation of premaxillary position was shown to be reduced as well.

BUSINESS

Bus01: Malekar, S. and Burks, T.

A Study on Some World Business Changers: Cognitive and Non Cognitive Perspective

Abstract: The concept of emotional intelligence leading to personal and professional success has generated a great deal of excitement among the general public, managers, academics, and business consultants alike. This study highlighted achievements of some world business changers to develop students, young professionals in ways that are personally meaningful, as well as constructive for society. Cognitive and non - cognitive competencies are

considered which include motivator, an opportunistic mind-set, acceptance of risk and potential failure, visionary, strategic and rational analyzer and lastly trustworthy. A qualitative study on these great business changers inspires, motivates and will be useful in providing feedbacks about the potentials and limitations of each individual to the parents, teachers and other authorities. This is an attempt is to derive some meaningful conclusions for furtherance of research goals.

Bus02: Brock, S.

Toward Improved Measurement of Teamwork Skills

Abstract: This research was a pilot to measure the characteristics of successful workplace teams in today's business environment. Sixteen mid-level managers at Hindustan Petroleum, a Fortune 500 Company, participated in February, 2105. The characteristics emerging were active listening, open debate, an environment of trust, and a focus on problem solution. Active listening was the most important component of the necessary effective communication. Mere talk or information was of dubious value. Active debate was critical, over and above the mere resolution of conflict. The factors that contributed to an environment of trust were flexibility and cohesiveness, surfacing the strengths and weaknesses of team members, and giving positive feedback. The need for a process focused on problem solution was expressed as "trying to help solve problems" and "taking responsibility for ensuring task completion." An inter-personal factor of "I like the group to have a good time" was equally recognized by some as most lacking and by others as least important. Additionally, the action of compromising was also met by some of the group as lacking and others as least important.

Bus03: Malekar, S. and Burks, T.

A Study on Some World Business Changers: Cognitive and Non Cognitive Perspectives

Abstract: The concept of emotional intelligence leading to personal and professional success has generated a great deal of excitement among the general public, managers, academics, and business consultants alike. This study highlighted achievements of some world business changers to develop students and young professionals in ways that are personally meaningful, as well as constructive for society. Cognitive and non - cognitive competencies are considered which include being a motivator, an opportunistic mind-set, acceptance of risk and potential failure, visionary, strategic and rational analyzer and lastly trustworthy. A qualitative study on these great business changers inspires, motivates and will be useful in providing feedback about the potentials and limitations of each individual to the parents, teachers and other authorities. This is an attempt is to derive some meaningful conclusions for furtherance of research goals.

Bus04: Wolf, B.

Research Based Learning within Management Program

Abstract: The poster outlines a pilot introducing research based learning within the framework of a lecture called "Topics in Finance" at Touro College Berlin. The set-up of the lecture included small research projects launched by students enrolled in this course and a 3-day study trip to the City of London at the end of the semester. The study trip linked theory and current practice. The course was designed to give greater coverage to those finance topics that are not covered in great detail in other courses. Biggest challenges for students included self-organization and wariness to set up a first small research project. Room for improvements include breaking down design of research project into smaller units by the professor conducting the lecture. Outlining possible research methodologies, creating awareness for self-directed time management and working on team skills should be included when repeating the format.

CARDIOLOGY

Car01: Ro, R., Halpern, D., Sahn, D.J., Homel, P., Arabadjian, M., Lopresto, C., and Sherrid, M.V.

Vector Flow Mapping in Obstructive Hypertrophic Cardiomyopathy to Assess the Relationship of Early Systolic Left Ventricular Flow and the Mitral Valve

Abstract: BACKGROUND: The hydrodynamic cause of systolic anterior motion of the mitral valve (SAM) is unresolved. OBJECTIVES: This study hypothesized that echocardiographic vector flow mapping, a new echocardiographic technique, would provide insights into the cause of early SAM in obstructive hypertrophic cardiomyopathy (HCM). METHODS: We analyzed the spatial relationship of left ventricular (LV) flow and the mitral valve leaflets (MVL) on 3-chamber vector flow mapping frames, and performed mitral valve measurements on 2-dimensional frames in patients with obstructive and nonobstructive HCM and in normal patients. RESULTS: We compared 82 patients (22 obstructive HCM, 23 nonobstructive HCM, and 37 normal) by measuring 164 LV pre- and post-SAM velocity vector flow maps, 82 maximum isovolumic vortices, and 328 2-dimensional frames. We observed color flow and velocity vector flow posterior to the MVL impacting them in the early systolic frames of 95% of obstructive HCM, 22% of nonobstructive HCM, and 11% of normal patients ($p < 0.001$). In both pre- and post-SAM frames, we measured a high angle of attack $>60^\circ$ of local vector flow onto the posterior surface of the leaflets whether the flow was ejection (59%) or the early systolic isovolumic vortex (41%). Ricochet of vector flow, rebounding off the leaflet into the cul-de-sac, was noted in 82% of the obstructed HCM, 9% of nonobstructive HCM, and none (0%) of the control patients ($p < 0.001$). Flow velocities in the LV outflow tract on the pre-SAM frame 1 and 2 mm from the tip of the anterior leaflet were low: 39 and 43 cm/s, respectively. CONCLUSIONS: Early systolic flow impacts the posterior surfaces of protruding MVL initiating SAM in obstructive HCM.

Car02: B Azab, M Shariff, R Steward, P Abotaga, J Nabagiez, & J McGinn Jr.

Evolution of Minimally Invasive Coronary Artery Bypass Grafting: Learning Curve

Abstract: Minimally invasive coronary artery bypass grafting (MICS CABG) is a safe and widely applicable procedure for coronary artery disease. We reviewed a single surgeon's experience with MICS CABG, noting operative time, number of bypasses performed, and rate of conversion to sternotomy.

CLINICAL MEDICINE

CM01: Manresa, A., Fox, E., and Hoang, V.

Fournier's Gangrene: A Product of the System

Abstract: Introduction: Fournier's gangrene (FG) is an uncommon disease characterized by severe pain in the perineum and genitalia due to a polymicrobial necrotizing fasciitis. Risk factors described include diabetes mellitus, chronic alcoholism, obesity, poor personal hygiene, immunosuppression, and low socioeconomic status. Case Presentation: A 56-year-old caucasian male presented to the hospital with acute scrotal swelling and severe pain. His medical history is significant for poorly controlled type two diabetes mellitus diagnosed five years prior (A1C 10.9). This patient arrived to the emergency room with a painful, firm, erythematous swelling in the right scrotum extending into the perineum for the five days. Social history was remarkable for fifty pack year history of cigarette smoking, cocaine abuse, chronic alcoholism and homelessness. The physical exam revealed warm, erythematous necrotic tissue from the right scrotum extending to the perineum with crepitation on palpation. Surgical debridement was done on three separate occasions due to incomplete debridement and cephalad spread of the infection along the patient's flank. The patient was also given Metronidazole and Vancomycin to further suppress the fasciitis in addition to Hydromorphone for the excruciating pain. After observing and treating the fasciitis, a multi-disciplined approach was

used to find housing and proper follow up care. Discussion: Socioeconomic factors have impeded proper access to health-care and led to poor control of this patient's condition. While low socioeconomic status is described as a risk factor, it is imperative that further research examines the relationship between FG and these social impediments.

ECONOMICS

Eco01: Jacob, M. and Szenberg, M.

The Changing Structural Conditions of the U.S. Commercial Banking Industry

Abstract: The commercial banking industry has experienced major structural changes over the past fifty years. As the commercial banking sector becomes progressively more competitive and simultaneously increasingly unregulated, the number of commercial banks fell nearly two thirds over the past half century. The effect of the mergers and acquisitions on the size distribution of commercial banks has been remarkable. The number of banks in the smallest size class (0-\$50 million) saw their share of deposits fall from 30 percent of industry deposits in 1966 to less than a quarter of a percent of deposits in 2014. However, banks in the largest size class (\$1 billion and up) went from controlling 35 percent of the total industry deposits to controlling a staggering 90 percent of the market share. This indicates a drastic alteration in the dynamics of the commercial banking industry as the sector shifts primarily toward large-scale banking, a trend that will likely continue into the future. It will be intriguing to learn the implications of this drastic change on the economy.

Eco02: Szenberg, M. and Ramrattan, L.

Distribution Channels of American Book Publishing: The Reshaping of an Industry

Abstract: Booksellers have always been at the mercy of the market. 19th-century economist Alfred Marshall wondered "what booksellers do for the extension of knowledge" (Marshall 1996, pp. 168-169). Our study probes the dynamics of the book industry to uncover an answer. New technology has changed the dynamics of the industry, with newer players such as Amazon and Barnes & Noble at the forefront. Technological shifts have drastically changed the traditional sources of economies of scale. Hypothesis I, (Bain): Concentration encourages cooperation among firms, creating potential for higher profit levels. Implication of Bain's Hypothesis: Variation in concentration ratios explains variation in sales. Hypothesis II, (Stigler): Small firms recognize and reward workers' ability more than large firms. Corollary: If small firms' profits are adjusted for these wage advantages, then there will be no correlation between profits and concentration. The results are significant: the responsiveness of sales to the four firms' concentration ratio (CR4) for just the Bain hypothesis ranges from 2.48 to 2.78. One implication for Bain's hypothesis is that a higher level of concentration pays off in terms of sales revenue. The concentration level increase is supported by the second equation that regresses concentration ratios on merger and market power indices. The results correlate well with the observation that the four-firm concentration has been increasing steadily in recent years, commensurate with the number of mergers that were taking place.

EDUCATION

Ed01: Bellavia, T.

The Words Remain Inside Project: Bullying STOPS Here!

Abstract: Overview: The Words Remain Inside is an interactive, project-based visual display. Exhibit participants will engage with a puppet that concretely shows what verbal micro-aggressions, harassment and bullying do to young scholars. Abstract: The Words Remain Inside: BULLYING STOPS HERE will address critical and recent tragic incidents that have occurred between students and teachers or among children within a classroom setting and beyond. The presentation will educate teachers on how to distinguish what is teasing and bullying and knowing the

signs that could prevent further untimely deaths. The presentation will have concept-based learning approaches coupled with project based learning. Each participant will create a puppet that will concretely represent what words can do: hurt, cause conflict and unfortunately marinate inside. Hence, this project- based learning can easily be replicated in each teacher's classroom and address different kind of conflicts in the classroom, school, or home. According to Smith, Cowie and Blades (2011); "Conflict can be unpleasant in short term and if repeated patterns of pervasive behavior, may be detrimental" (p. 164). Some critical incidents that are encountered between children in the classrooms or school could be avoided or thwarted if the proper professional development is implemented and educators become aware of what detriment persistent taunting does. Educators should make it their aim to redirect student's antecedent triggers or taunts before the students become despondent and withdrawn.

IMMUNOLOGY

Imm01: Hershkop, E.

Zap Vet Bovine IgG Immunoassay Test

Abstract: Newborn calves obtain passive immunity by absorbing IgG antibodies from the mother's colostrum (first milk). At approximately 24 hours after feeding "intestinal closure" occurs and IgG can no longer be absorbed. Calves with serum IgG levels of 10 mg/ml and higher are generally considered protected. Inadequate passive transfer of IgG can result in increased infection, morbidity and mortality. It is crucial for farmers to be able to test the IgG levels of their calves before intestinal closure occurs. Standard tests such as Radio Immune Diffusion take 24-36 hours to get results. By this time intestinal closure has already occurred and it is too late to treat the calf. ZBx has developed a unique point-of-care immunoassay test to measure IgG blood levels. It is a one-step test that requires only 35 micro liters of blood and takes 15 minutes to show results. This test gives farmers ample time to treat their calves before intestinal closure occurs.

Imm02: Fanning, S.L., Vazzana, K., Donato, M., and Korngold, R.

Immune Reconstitution Analysis of Patients Undergoing Extracorporeal Photopheresis for the Treatment of Chronic Graft-Versus-Host Disease

Abstract: Allogeneic blood and marrow transplantation for the treatment of hematologic malignancies continues to be plagued by complications such as chronic graft-versus-host disease (cGVHD), which can occur in upwards of 50% of patients. Extracorporeal photopheresis (ECP) has been successfully used to abate cGVHD symptoms in many patients. The effect this therapy has on lymphocyte subsets in the reconstituting immune compartment has yet to be fully ascertained. In the present study, we used flow cytometric analysis to examine lymphocyte subsets in patients undergoing ECP for the treatment of cGVHD. Peripheral blood was collected from patients prior to starting ECP and after 90 days of treatment. CD4+ T cell populations were analyzed for expression of CD45RA and CCR7 to classify naïve, central memory (TCM), effector memory (TEM), and terminally differentiated effector memory (TEMRA) cells. The data reported shows that all CD4+ T cell populations analyzed are altered in cGVHD patients compared to healthy controls. In particular, CD4+ TCM and naïve cells were decreased in cGVHD patients, while CD4+ TEM and TEMRA were elevated in these patients. Analysis of the same subsets in cGVHD patients after 90 days of ECP treatment revealed that the percentage of CD4+ TCM increased above baseline levels in the 5 cGVHD patients examined, while CD4+ TEMRA were decreased during the same time frame. Additionally, results indicate increased ratios of both TCM:TEM and CD4+ TCM:TEMRA

in these patients. This data strongly supports the role of ECP in the normalization of CD4+ T cell populations in cGVHD patients.

MATHEMATICS

Math01: Grenadir, A.

A Formalization of Topical Logic

Abstract: Aristotle's Term Logic was the first formal logic with specific rules of inference - the valid forms of syllogism. The Scholastics in the Middle Ages labored to settle issues that Aristotle had left unresolved, including the meaning of syncategorematic words (every, some, if-then, and, or, etc.) and the expression of multiple generality. Their work is called Terminist Logic. In the Renaissance humanist revolution that overthrew Scholasticism, a new logic, Topical Logic, arose. It offered a shorter, simpler approach for teaching and a practical technique for organizing and memorizing information. It led to a revolution in the traditional curriculum of many universities in Europe and influenced the Puritans who founded Harvard in colonial America. Many logic books using this approach were printed up until the 1700's. Topical Logic employs a method of generating relationships between ideas called Topics of Invention, an approach discussed in Aristotle's Topics and extended by Agricola, Ramus and others. Topical Logic does not discuss forms of inference, so it is not a full logical system. However, even in its heyday, Topical Logic was combined with elements of Aristotelian logic, as in the book written in Latin by Marcus Wendelin that served as the basis for Rabbi Moshe Chaim Luzzatto's (the Ramchal's) Book of Logic (Sefer HaHiggayon in Hebrew). The goal of this research is to provide a formalization of the version of Topical Logic presented in the Ramchal's Book of Logic. This may prove useful for the ongoing search for a suitable knowledge representation language for the Semantic Web.

NEUROLOGY

Cervenka, M.C., Corines, J., Boatman-Reich, D.F., Eloyan, A., Sheng, X., Franaszczuk, P.J., and Crone, N.E.

Electrocorticographic Functional Mapping Identifies Human Cortex Critical for Auditory and Visual Naming

Abstract: More comprehensive, and efficient, mapping strategies are needed to avoid post-operative language impairments in patients undergoing epilepsy surgery. Conservative resection of dominant anterior frontal or temporal cortex frequently results in post-operative naming deficits despite standard pre-operative electrocortical stimulation mapping of visual object (picture) naming. Naming to auditory description may better simulate word retrieval in human conversation but is not typically tested, in part due to the time demands of electrocortical stimulation mapping. Electrocorticographic high gamma (60-150 Hz) activity, recorded simultaneously through the same electrodes used for stimulation mapping, has recently been used to map brain function more efficiently, and has at times predicted deficits not anticipated based on stimulation mapping alone. The present study investigated electrocorticographic mapping of visual object naming and auditory descriptive naming within conservative dominant temporal or frontal lobe resection boundaries in 16 patients with 933 subdural electrodes implanted for epilepsy surgery planning. A logistic regression model showed that electrodes within traditional conservative dominant frontal or temporal lobe resection boundaries were significantly more likely to record high gamma activity during auditory descriptive naming than during visual object naming. Eleven patients ultimately underwent resection and 7 demonstrated post-operative language deficits not anticipated based on electrocortical stimulation mapping alone. Four patients with post-operative deficits underwent a resection that included sites where high gamma activity was observed during naming.

These findings indicate that electrocorticographic mapping of auditory descriptive naming may reduce the risk of permanent post-operative language deficits following dominant temporal or frontal resection.

NURSING

Nur01: Pinsker, R. and Lemmo, E.

Bariatric Surgery as a Treatment Option for Type 2 Diabetes and Metabolic Syndrome

Abstract: About one-third of Americans are classified as obese, using the definition categorization of body mass index (BMI) greater than 30kg/m². Type 2 Diabetes (DM2) is considered one of the major health problems associated with obesity. Bariatric surgery appears to be one of the most effective treatment options for extreme obesity. Sarwer & Dilks (2011) demonstrate results exceeding expectations achieving and sustaining weight management when compared to other treatment options. Considering this observation, an investigation of the scientific literature was conducted to evaluate bariatric surgery as a primary intervention for patients with DM2 or metabolic syndrome. This literature investigation evaluated the different options obese patients currently have available, the results of those options, and the potential side effects associated with these options. Based on this literature review, it can be concluded that bariatric surgery should not be the preferred treatment option for those individuals classified as obese resulting from DM2 or metabolic syndrome.

OCCUPATIONAL THERAPY

OT01: Molinsky, R., Fakhlayeva, O., Nisanov, S., Selig, S. and Soleymani, R.

Touro College Occupational Therapy Assistant Program Evaluation

Abstract: This study evaluated the use of evidence-based practice by Touro College OTA alumni. A survey was carried out to collect the data. Results show that there was an increase in the use of evidence-based practice.

OT02: Precin, P., Fox, E., Muskat, C., Bardanova, N. and Buencamino, S.

Time Perspective and Academic Achievement in Occupational Therapy Doctoral Students

Abstract: Time perspective is the method by which individuals subjectively conceptualize time by dividing their experiences into past, present, and future time categories and is developed and modified by societal, individual, and cultural influences, in order to organize, clarify, and attribute meaning to experiences, according to Zimbardo's theory of time perspective. Literature has shown a strong correlation between different time perspectives and academic achievement. The purpose of this study was to examine the relationship between time perspective and academic achievement in occupational therapy doctoral students enrolled in online, hybrid, and classical learning environments. Researchers utilized a quantitative, cross-sectional, non-experimental, online survey design. Fifty-six students enrolled in occupational therapy doctoral programs in the United States completed the Zimbardo Time Perspective Inventory via SurveyMonkey. A Pearson correlation found a statistically significant ($p = .005$) negative correlation ($r = -.395$) indicating that students with a higher past-negative time perspective tended to have lower grade point averages (GPAs). There were no other significant correlations between GPA and other time perspectives. Results indicate that students who had stronger biases toward thinking negatively about their past and focused on the past instead of the present or future tended to be less successful academically than their peers. This may be due to their spending less time focused on learning in the present and an inattention to setting and obtaining future goals, all

necessary for the occupation of being a successful student. Since time perspective can be changed through intervention, application to occupational therapy educational programs will be discussed.

OT03: Precin, P., Aronova, S., Moses, A., Snitzer, C. and Zatutinsky, Y.S.

Relationship between Time Perspective and Occupational Therapy Level II Fieldwork Performance

Abstract: Time perspective (TP) is the method by which individuals subjectively conceptualize time by dividing their experiences into past, present, and future time categories. Literature reports correlations between TP and academic outcomes; however, the effect of TP on student fieldwork performance (FWP) has not been investigated. The purpose of this cross-sectional, non-experimental study was to investigate the relationship between TP and level II FWP in occupational therapy (OT) students enrolled in a private multi-campus college in New York. Eighty-nine participants completed the Zimbardo Time Perspective Inventory via SurveyMonkey. Fieldwork performance was measured using retrospective FWP data from level II FWP evaluations that were completed by Fieldwork Supervisors. Two-tailed Spearman Rho correlation was used to analyze the relationship between FWP and TP for each student. Future TP related to three OT FWP outcomes: overall score in physical disability, evaluation, and basic tenets of OT in mental health. The higher the score on future TP, the higher the FWP scores. Present fatalistic TP related to two OT FWP outcomes: basic tenets of OT and management of OT services in physical disability. The higher the score on past fatalistic TP, the lower the FWP scores. Present hedonistic TP related to one OT FWP outcome: overall score in physical disability. The higher the score on past hedonistic TP, the lower the FWP score. Results will be discussed in relation to enhancing FWP in OT students since TP can be altered with intervention.

OT04: Orentlicher, M.L.

Participatory Action Research on the Experiences and Perceptions of Individuals who Receive Disability Funding through Consumer-Directed Funding

Abstract: The purpose of this study was to use Participatory Action Research (PAR) to learn about the experiences and outcomes of persons with developmental disabilities and their families who are receiving consumer directed budgets. Consumer-directed budget is an innovative approach to services within Medicaid Home and Community Based Services (HCBS) Waiver disability benefit programs. The person with disabilities receives a budget that can be used to purchase services or hire help to achieve desired goals in employment, education, independent living, and community participation. The poster described phase three of the study, which included case studies with two families. The case study included: a. An in-depth interview about the family's experiences and perceptions of consumer-directed funding. b. Three assessment tools that evaluate occupational engagement (i.e., participation in desired activities in the community), individual quality of life and family quality of life: • Participation Objective, Participation Subjective (POPS; Brown, 2006) • The Quality of Life Inventory (QOLI; Frisch, 1994) • The Beach Center Family Quality of Life Scale (FQOL; Beach Center on Disability, 2012). Results from the POPS showed that the persons with developmental disabilities participate in desired activities at their desired level of participation. The QOLI showed that they experience average and high QOL. The FQOL showed that the two families were very satisfied with their QOL. In-depth interviews revealed that family resources such as financial and parents' education impact the outcomes for the person with developmental disabilities.

OT05: Orentlicher, M.L.

The Experiences and Perceptions of Collaboration between Occupational Therapists and Other School Professionals

Abstract: The purpose of this study was to gain an understanding about occupational therapists' and other school professionals' (e.g., teachers, physical therapists, speech-language pathologists, psychologists, etc.) perceptions and experiences of collaboration. Specifically, the study assessed implementation, supporting factors, and barriers for collaboration between school professionals. The poster describes the first phase of the study, which included semi-

structured interviews with two national experts in school-based occupational therapy. The interviews were conducted using the virtual meeting application, Zoom. Both interviews lasted approximately one hour, in one session. The experts were asked about their experiences and perceptions about collaboration and its importance to occupational therapy school-based practice. Both participants agreed that collaboration is beneficial for student outcomes. Collaboration allows for advocacy of the occupational therapy profession, as other professionals are exposed to occupational therapy's theories and treatment approaches. Collaboration should be supported by administration and all parties involved and should expand within school settings. Collaboration is also equally valuable and beneficial for the profession in other settings.

OT06: Collins, T.

Occupational Therapy's Role in Bullying Prevention Programs

Abstract: Bullying is a common phenomenon in schools today particularly when it comes to youth with disabilities, minorities and lesbian, gay, bisexual, and transgender (LGBT) youth. Racial and ethnic minorities are often stereotyped to behave or perform a certain way. Those children who don't adhere to their stereotype are at a higher risk for being bullied than minority populations.¹ Children with disabilities are two to three times more likely to be bullied. A National School Climate Survey from 2003 found that "4 out of 5 LGBT students reported being verbally harassed at school because of their sexual orientation, and more than 9 out of 10 reported hearing homophobic remarks". Occupational therapy practitioners (OTs) should be involved in bullying prevention. Given our training and commitment to mental health, social participation, behavior strategies, meaningful occupations and community inclusion, we are in a natural position to prevent bullying and promote acceptance of all people. OT involvement in bullying should be in preventing bullying and in providing students with tools to cope and communicate feelings about their struggles. Bullying prevention should take the form of a whole school initiative, where negative messages aren't tolerated and programs involve all relevant stakeholders, including families and community agencies. Bullying prevention is essential for establishing a safe school environment. Strategies may include strengthening gay straight alliances, opportunities for open conversations, and promoting student clubs for community environment. School professionals, including OTs, should prevent stereotyping of their students. Suggestions for community youth organization involvement, such as meetings with local community leaders and violence prevention developing strategies through youth-related activities in communities and outreach are essential. The purpose of this session is to provide OTs with the resources and tools to help them prevent bullying in their schools. Strategies will be focused on bullying prevention for students with disabilities, minorities and lesbian, gay, bisexual, and transgender youth. Presenters will discuss whole school and classroom based activities in middle and high schools that help promote a safe environment. Strategies to involve families, other school personnel, and community organizations will be discussed. Presenters will also discuss strategies for helping youth cope with power imbalances express their feelings, develop healthy self-image, and engage in meaningful occupations.

OT07: Purohit, R., Hoch, C., Katz, R., Kohn, R. and Mann, B.

Occupational Therapy Student Perceptions of Academic Preparation for Fieldwork

Abstract: Student academic preparation is an important contributor to success during clinical fieldwork experiences. This study evaluated student perceptions of their academic preparation for Level II fieldwork within an occupational therapy program. The purpose of the study was to determine if students felt academically prepared for fieldwork and to assess whether the curriculum adequately prepares students for their Level II clinical fieldwork. Data was collected from the academic preparation section of the Student Evaluation of Fieldwork Experience (SEFWE) surveys completed by 92 students following their Level II Fieldwork experience. The following research questions were examined: (1) How did students rate the adequacy and relevance of academic coursework in relation to their Level II fieldwork? (2) What did students perceive to be the strongest aspects of the academic program in terms of preparation for fieldwork, and (3) What changes did students recommend to the academic program relative to the needs of their Level II fieldwork? Overall, students rated their academic preparation for fieldwork highly, identifying courses related to interventions and evaluations as the strongest aspects of the program. Students also recommended changes related to intervention planning and an increase in teaching evaluation tools within the

curriculum. These results are consistent with previous research which indicates that students prefer a focus on intervention strategies as opposed to theory-based learning (Hodgetts et. al., 2007).

OT08: Taddonio, S., Eisenmann, E., Palmer, T., and Wizman, A.

The Benefits and Experience of Hippotherapy for Children with Cerebral Palsy, Autism, and Gross Motor Dysfunction

Abstract: Hippotherapy is a therapeutic treatment that uses a horse in order to facilitate outcomes in areas including balance, coordination, mobility, strength, postural stability, communication, socialization, attention, emotional regulation, and more. The patient sits on a horse with a pad (not a saddle) so that contact is close. The horse is lead by a volunteer and the therapist walks alongside while facilitating outcomes either thru direct contact with the patient or by asking the patient to perform activities. Common diagnoses treated include cerebral palsy, autism, and a variety of neuromuscular disorders. The purpose of the research is to document the experiences and benefits of participating in hippotherapy in children diagnosed with cerebral palsy, autism and other gross motor dysfunctions. The poster describes the first phase of the study, which included in-depth interviews with mothers about their children's experiences with and effects of hippotherapy.

Preliminary results include three emerging themes:

1. Hippotherapy is beneficial with positive outcomes.
2. Hippotherapy doesn't look like "therapy", and therefore is more pleasant to the child.
3. Hippotherapy can be costly and not covered through insurance.

OT09: Leeman, B., Alpert, M., Rub, R., and Schacker, J.

The experiences of individuals and family members living with Parkinson's disease

Abstract: This study aims to explore the experiences of individuals and family members living with Parkinson's disease. In-depth phenomenological interviews were conducted with 2 persons diagnosed with Parkinson's disease and 1 caregiver. Thematic analysis was used to capture the participants' experiences and coping with Parkinson's disease. Preliminary analysis resulted in 4 emerging themes including; personal insight to limitations, social participation, motivation and independence. Caregiver perspective was also captured and focused on feelings of anxiety and stress.

OT10: Guthrie, R., Baja, A., Bochen, N., and Lasson, K.

Occupational Therapy Assistant Students Perceptions of People with Disabilities

Abstract: The purpose of this study is to examine the attitudes of occupational therapy assistant (OTA) students toward people with disabilities. In this descriptive exploratory study, twelve 1st year occupational therapy assistant students were surveyed using the Attitudes Toward Disabled Persons (ATDP) scale to assess perception. The ATDP is a 30 item self-reporting survey that uses a Likert scale to measure attitudes towards individuals with disabilities. This study found that 63% of respondents had positive attitudes towards people with disabilities while 23% of respondents had negative attitudes. The remaining 17% of respondents were neither positive nor negative. Respondents held more positive attitudes related to persons with disabilities external drive, abilities/capacities, and control of internal feelings. Attitudes were most negative regarding appropriate societal participation. Conclusion: Most 1st year occupational therapy assistant students have favorable views of individuals with disabilities but negative perceptions of this population still persist. Understanding how OTA students perceive potential consumers can help to inform decisions about curriculum to address learner biases.

OT11: Wong, S.J.D., Denny, J., and Romero-Marano, J.

The Impact of "Tender", an Earth Centered, Community Based, Intergenerational Program

Abstract: "Tender" is a community based program that cultivates intergenerational connections through engagement in meaningful activities that sustain spiritual, social, mental, and physical health while exploring and celebrating the Earth. Community-based learning: Structured education incorporating community activities to enhance the understanding of what is being taught. Intergenerational programs engage older populations with younger populations, and sometimes children, to collaborate on shared activities that incorporate common interests and activities. These programs have the potential to enhance learning, promote health, and ultimately heighten quality of life for all participants and the community. The challenge of intergenerational programs is to deconstruct stereotypes and create a program to satisfy the needs of those, of varied ages, involved. An in-depth focus group interview was conducted with 3 older adult participants. Themes were identified. For the older adult participants, the Tender program created new opportunities. The participants expressed that the simplicity reduced barriers and facilitated engagement in the Earth based activities. Through the activities connections were created with the Earth and between the generations. The experience was described as "life giving" and seemed to create purposeful and meaningful opportunities allowing participants to realize their full capabilities.

OT12: Kardachi, J., Frankel, S., Glazer, E., Lampert, Z., and Parnes, M.

The Long-Term Effectiveness of Fall Stop... MOVE STRONG, a Fall Prevention and Strengthening Program for Community-Dwelling Older Adults, on Falls, Balance and Confidence

Abstract: The purpose of this study was to investigate whether repeat attendance at the Fall Stop...MOVE STRONG (FSMS) program resulted in continued improvement or in maintenance of gains in balance, confidence and number of falls from the first attended class of 12 weeks to subsequent sessions of the same length held over the course of several years. The sample included 43 people, 5 males and 38 females, aged between 67 and 92, from various racial and ethnic backgrounds, who attended FSMS Classes at 2 locations in New York City. The investigators compared balance, confidence and number of falls from initial session to subsequent attended sessions. Results showed that repeat attendance at the FSMS program resulted in improvements in balance, confidence and number of falls. The greatest improvements were observed in participants who attended 6 to 8 sessions of the program; however, an advanced versus an intermediate class level did not result in greater gain. More research is required, however, as many of the improvements were not statistically significant.

OPHTHAMOLOGY

Oph01: Rotblat, D., Profesorske, M., Freedman, J., and Iserovich, P.

Latent Transforming Growth Factor beta-2 (TGF- β 2) as a predictor for Molteno Implant success

Abstract: Glaucoma is a disease characterized by increased intraocular pressure (IOP) in the eye causing nerve damage. The IOP can be reduced via Glaucoma Filtration surgery. A device called a Molteno Implant can be inserted within the conjunctiva causing a bleb to form, reducing IOP. Many patients with Molteno Implants show some complications causing impairment of implant efficiency. Upon testing the cytokine levels of the eye aqueous during hypertensive bleb development, there was a significant increase in the levels of TGF- β 2, a pro-inflammatory cytokine. It was also found that the higher the TGF- β 2 concentrations, the less likely the Molteno Implant and bleb stayed effective. Lowering the concentration of the latent form (non-active) of TGF- β 2 showed a statistically significant increase in the survival of the implant and bleb ($p < 0.007$). It was hypothesized that the latent form of TGF- β 2 is the

main predictor of Molteno success and not the active form. Both forms of proteins found in eye aqueous were tested to evaluate rates of degradation. Several samples of eye aqueous obtained from glaucoma patients during hypertensive bleb development were combined and then split. Each split sample was held in different conditions and then tested after a certain amount of time for latent and active forms of TGF- β 2. The results were that TGF- β 2 latent form is stable for long periods of time (3-10 days) while the active form degrades rapidly at room temperature. In conclusion, the latent form of TGF- β 2 could be used as a biomarker for the success/failure of the Molteno Implant.

OSTEOPATHIC MEDICINE

OM01: Yuan, K.

Insulin and Metformin in NIDDM

Abstract: This poster is a meta-analysis of research regarding the combination usage of insulin and metformin versus insulin alone. These two medications used in conjunction have improved glycemic control, reduced insulin usage, weight gain, and LDL. It has been shown to be effective in type one and two diabetes, while particularly effective in obese type two patients. Metformin increases sensitivity and decreases resistance to insulin and therefore would be useful in conjunction with insulin injections. However, new research shows that the combination does not lower mortality in patients versus insulin usage alone in type two diabetics. Furthermore, the combination may actually slightly increase mortality rates among type two diabetics. The combination of metformin and insulin should only be used in type one diabetics and not in type two diabetics. A preferred medication after metformin administration for type two diabetics may be the addition of a sulfonylurea instead of insulin. The sulfonylurea and metformin combination has been associated with lower cardiovascular risk and mortality versus the metformin and insulin combination.

OM02: Hoang, V., Pak, T., Yokers, B., and Stern, R.

Anemia as a Risk Factor for Emphysematous Cystitis: Case Report

Abstract: Background Emphysematous cystitis, if untreated, is a fatal lower urinary tract infection characterized by the presence of gas bubbles in the bladder or urinary lumen. The relative rarity of this disorder has made identifying the risk factors and elucidating the pathophysiologic mechanism a difficult challenge for physicians. This is the first reported case of emphysematous cystitis and anemia caused by hereditary spherocytosis. Case presentation A 65-year-old woman with a complex medical history including diabetes and hereditary spherocytosis presented with severe bilateral flank pain that started 4 days earlier. Prior to the onset of flank pain, the patient complained of symptoms of a UTI, associated with hematuria, loss of appetite, nausea, and increased urinary frequency. The patient developed pulsating bilateral flank pains described as a radiating band that began on the patients left side. The patient also described hearing bubbling gas sounds, in addition to an "ammonia like" smell during urination. On admission patient's hemoglobin was reported as 6.7g/dL with a hematocrit of 19% signifying severe anemia caused by hereditary spherocytosis. CT scan showed intraluminal gas with urinary bladder wall thickening, consistent with the "donut sign" morphology, compatible with emphysematous cystitis. Conclusion The correlation between diseases that cause severe anemia, such as hereditary spherocytosis and emphysematous cystitis deserve further evaluation. The rare incidence and sparse publications involving this disorder limits any conclusions regarding the present case. Nonetheless, anemia should be considered in the overall pathophysiologic mechanisms of emphysematous cystitis, particularly for the congenital anemias, as exemplified by the present case.

OM03: Hoang, V., Manresa, A., and Fox, E.

Brown-Séquard Syndrome, Secondary to Cervical Osteophytectomy

Abstract: Introduction: Brown-Séquard syndrome is caused by a hemi-section of the spinal cord usually after trauma or malignancy, characterized by a rare manifestation of ipsilateral proprioceptive deficits and hemiplegia with

contralateral loss of pain and temperature. Cervical osteophylectomy, a procedure to remove bone spurs that compress the spinal cord poses many severe complications, one of which that should be considered and illustrated by this case presentation is Brown-Séquard Syndrome. Case Presentation: A 52-year-old woman presented to the hospital with progressive weakness involving the upper extremities. MRI revealed large and thick ossification of the posterior longitudinal ligament, which was determined by her neurosurgeon to require a cervical osteophylectomy with corpectomy. Cervical osteophylectomy with corpectomy was done on this patient to decompress her spinal cord and remove pathologic osteophytes. Postoperative MRI noted cord edema with persistent central canal stenosis. On physical exam, patient had lost all sensory with preservation of movement on her right side, with simultaneous lost of movement with preservation of pain and temperature sensation on the left, consistent with the rare diagnosis of Brown-Séquard Syndrome. Discussion: This case highlights a severe complication of cervical osteophylectomy. Brown-Séquard Syndrome is a devastating complication that should be considered before performing this highly invasive surgery. Neurosurgeons pose a strong ethical dilemma when deciding to perform a cervical osteophylectomy. This case should be used to further exemplify that conservative management such as physical therapy, osteopathic manipulation or other medical treatments should be applied before an operative approach is taken.

OM04: Lichterman, J., Lu, Y., Chen, J., Ke, C., Tseng, H., and Posadas, E.M.

Sub-Classification of Prostate Cancer Circulating Tumor Cells (CTCs) by Nuclear Size Reveals Very-Small Nuclear CTCs in Patients with Visceral Metastases

Abstract: Background In this observational study, we used NanoVelco chips, a novel microfluidic technology for rare cell capture, to isolate circulating tumor cells (CTCs) from prostate cancer (PC) patients and generated cell images appropriate for histopathological analysis and nuclear size measurement. In doing so, we identified a CTC subset we termed very-small-nuclear CTCs (vsnCTCs), which exhibits a significant correlation with the presence of visceral metastases in PC. Methods A total of 148 blood samples were obtained from 57 PC patients across the spectrum of metastatic states: no metastasis, non-visceral metastasis, and visceral metastasis. Captured CTCs were subjected to pathologic review including nuclear size. The distribution of nuclear sizes was analyzed using a Gaussian Mixture Model. Correlations were made between CTC subpopulations and metastatic status. Results Statistical modeling of nuclear size distribution revealed 3 distinct subpopulations: large-nuclear (lnCTC), small-nuclear (snCTC), and very-small-nuclear CTCs (vsnCTCs). snCTC + vsnCTC identified patients with metastatic disease. vsnCTC counts alone, however, were elevated in patients with visceral metastases when compared to those without (0.36 ± 0.69 vs. 1.95 ± 3.77 cells/mL blood, $p < 0.001$). Serial enumerations suggested the emergence of vsnCTCs occurred prior to the detection of visceral metastases. Conclusions There are morphologic subsets of CTCs that can be identified by nuclear size measurement. This study suggests that they contain information on disease status. The detection of vsnCTCs correlated with the presence of visceral metastases and should be formally explored as a blood-borne biomarker to identify patients at risk for developing this clinical evolution of PC.

OM05: Williams, K., Schneider, B., Lajos, P., Marin M., and Faries, P.

Supply and Demand: Will We Have Enough Vascular Surgeons by 2030?

Abstract: The increase in prevalence of certain cardiovascular risk factors increases susceptibility to vascular disease, which may create demand for surgical intervention. In our study, data collected by the American Association of Medical Colleges Physician Specialty Databook of 2012, the United States Census Bureau and other nationwide organizations, were referenced to calculate future changes in vascular surgeon supply and prevalence of people at risk for vascular disease. In 2010, there were 2853 active vascular surgeons. By 2040, the workforce is expected to linearly rise to 3573. There will be an exponential rise in people with CV risk factors. Adding to concern, in 2030, an estimated 3333 vascular surgeons will be available for 180,000,000 people with at least one risk factor for peripheral arterial disease. The paucity of properly trained surgeons entering the workforce needs to be addressed before this shortage becomes a larger burden on healthcare providers and Governmental spending.

OM06: Kozlowski, P.B., Singer, E.J., Valdes-Sueiras, M., Coots, P.K., Mirchandani, A., Jahed, S., Allan, H., Nguyen, P., Yu, J., and Degenhardt, K.

Senile Changes in Aging Patients with HIV/AIDS

Abstract: Contemporary AIDS patients who are treated with anti-retroviral therapy can anticipate near-normal lifespan, potentially reaching their seventh or eighth decades, at time when there is an increased risk of Alzheimer's disease. This study was done to assess the incidence of senile plaques and neurofibrillary tangles in the brains of aging AIDS patients. Brain specimens were obtained from the National Neurological AIDS Bank Los Angeles, CA,. Brain sections from fifty-six AIDS cases (age 50 to 76 years at death) and fifteen HIV-seronegative control cases (age 51 to 78 years at death) were immunostained for beta amyloid, and tau protein. In the HIV/AIDS group, mild and moderate 4G8 positive amyloid deposits were found in ten cases aged 54, 55, 57,58,59 61,66, 68 ,70 and 74 years. In an additional case, 66 years old, there were severe amyloid deposits presenting as classical dense cored senile plaques. In the control group, four cases with mild and moderate amyloid deposit were found, age 57, 62, 66 and 73 years, with additional two cases, age 73 and 78, with severe deposits of numerous cored amyloid plaques. Tau positive tangles were surprisingly infrequent and most evident in cases with dense cored amyloid plaques. The incidence of amyloid plaques in HIV/AIDS was surprisingly lower than expected with only two cases out of fifty-six presenting with classical cored plaques. In ten other cases, amyloid deposits were at low levels and, in some of those cases, would have been missed if immunostaining for amyloid were not performed.

OM07: Ward, M., Zagelbaum, N., and Bhari, T.

Utilizing an Evidenced Based Mental Health Training Program among Medical Students: A Pilot Study

Abstract: Aim: Training medical students to recognize and intervene during a mental health crisis enables them to meet the needs of future patients. However, mental health training during medical school has historically been lacking, and consists of a single psychiatry rotation. This study examines potential benefits of early training, utilizing the evidence based Mental Health First Aid (MHFA) course, developed for those who work with the public. Methods: 27 pre-clinical medical students were assessed using the Suicide Intervention and Response Inventory (SIRI) before and after MHFA training. Pre and post-training SIRI scores were compared to 23 medical students who recently underwent a psychiatry rotation. We aim to determine effectiveness of the training compared to standard medical education. Results: Participants who underwent MHFA training improved in their overall scores and attitudes. Mean SIRI scores increased from 21.44 to 22.18 after training. Post-training subjects scored higher than students who had completed a psychiatry rotation in their clinical years. Significant improvement between the untrained and trained subjects was observed in one section of the SIRI assessment ($p=0.043$, $SD=.327$) with no significant differences observed between the MHFA attendants and medical students who had undergone psychiatry rotations. Conclusions: Exposing medical students to mental health training prior to clinical years improved their knowledge and attitudes towards recognizing and responding to the mental health crises. This training should be adapted to focus on encounters between clinicians and patients in order to be more effective. A larger subject group and more stringent assessments should be used in further trials.

OM08: Papetti, M. and Kozlowski, P.

An Inexpensive Apparatus for Maintaining a Temperature-Controlled Environment for Time-Lapse Video Microscopy of Cultured Cells

Abstract: Many aspects of cell physiology, including migration, membrane function, and cell division, can best be understood by observing cell dynamics over a period of time by video microscopy. In order to preserve cell homeostasis for extended times, temperature, pH, gas concentrations, and humidity cells are exposed to must be carefully controlled, and importantly, temperature fluctuations common to most laboratories must be avoided to prevent focus drift in the microscope. Sophisticated equipment that controls these parameters with high precision is now commercially available but is often cost prohibitive. We have constructed a simple, low-cost apparatus that

maintains a microscope and cell culture vessel at 37 +/- 0.2 degrees Celsius for extended time periods over 24 hours. The apparatus consists of an acrylic box enclosure as well as a PID (proportional-integral-derivative) controller that senses input from a standard thermocouple and regulates power output to a small strip heater. Together, the entire apparatus encloses a small volume (0.077 m³, including microscope) and costs under \$500. Using this apparatus, an inverted microscope equipped with phase contrast optics, a digital camera programmed to take pictures at 1 minute-intervals, and free software to combine these pictures into videos, we have utilized time-lapse imaging to observe aspects of colon epithelial cell physiology not evident by static microscopy. In particular, we have observed novel intracellular and extracellular vesicle movements, dynamic membrane structures, and kinetics of normal and abnormal mitoses, previously not observable by static imaging, that will enhance our understanding of colon epithelial cell biology.

OM09: Dady, N.

Exploring the Relationship between Readmission Factors and Dental School Students Success

Abstract: This quantitative study assessed the preadmission factor relationship to success at a graduate dental school. Preadmission factors are used nationally to assess student ability. There are concerns about the reliability of these factors in measuring URM student ability. 1,275 records were collected and assessed for those admitted between the years 1998-2009. Multiple linear regression analysis was conducted to assess the relationship of the pre admission variables to the continuous variable Dental School GPA. Logistic regression analysis was conducted to assess the relationship of the pre admission variables to the dichotomous categorical variables of Licensure Obtainment and Degree Awarded Status. Based on the findings, recommendations were made for bolstering the factors that contribute to a student's success in dental school.

OM10: Papetti, M. and Kozlowski, P.

An Inexpensive Apparatus for Maintaining a Temperature-Controlled Environment for Time-Lapse Video Microscopy of Cultured Cells

Abstract: Many aspects of cell physiology, including migration, membrane function, and cell division, can best be understood by observing cell dynamics over a period of time by video microscopy. In order to preserve cell homeostasis for extended times, temperature, pH, gas concentrations, and humidity cells are exposed to must be carefully controlled, and importantly, temperature fluctuations common to most laboratories must be avoided to prevent focus drift in the microscope. Sophisticated equipment that controls these parameters with high precision is now commercially available but is often cost prohibitive. We have constructed a simple, low-cost apparatus that maintains a microscope and cell culture vessel at 37 +/- 0.2 degrees Celsius for extended time periods over 24 hours. The apparatus consists of an acrylic box enclosure as well as a PID (proportional-integral-derivative) controller that senses input from a standard thermocouple and regulates power output to a small strip heater. Together, the entire apparatus encloses a small volume (0.077 m³, including microscope) and costs under \$500. Using this apparatus, an inverted microscope equipped with phase contrast optics, a digital camera programmed to take pictures at 1 minute-intervals, and free software to combine these pictures into videos, we have utilized time-lapse imaging to observe aspects of colon epithelial cell physiology not evident by static microscopy. In particular, we have observed novel intracellular and extracellular vesicle movements, dynamic membrane structures, and kinetics of normal and abnormal mitoses, previously not observable by static imaging, that will enhance our understanding of colon epithelial cell biology.

OM10: McWhir G, Gorman D, Reinhart-McMillan R, Degenhardt K

Analyzing Tumor Response in Mice Supplemented with a Ketogenic Diet and Concurrent Chloroquine Mediated Autophagy Inhibition

Abstract: Angiogenesis is required to supply a growing tumor with vital nutrients. As tumors outgrow their blood supply many of the cells experience ischemic stress. Autophagy is the catabolic breakdown of a cell's own components for nutrients and is a critical survival pathway cancer cells use during times of stress. Mitochondria serve as a primary target for autophagic recycling in cancer cells during autophagy. Tumor cells stained with the mitochondrial marker VDAC or ATPB show a decreased mitochondrial presence compared to cells without ischemic conditions. Mitochondria are required in order to utilize amino acids as an energy source. During cancer cell growth, the cells generally underutilize mitochondria for energy production. Thus, we proposed that tumors in mice fed a high protein ketogenic diet would either show decreased growth rates or undergo necrosis. As predicted, the tumors did show decreased growth compared to mice on a traditional diet. The slow growing tumors from the ketogenic mice show an increase in staining for VDAC or ATPB. This indicates that a metabolic switch occurred either by diverting the mitochondria autophagic recycling pathway or by increasing mitochondrial population.

PHARMACY

PH01: Rumore, M.M., Choy, M. and Cohen, K.R.

Medication Repurposing in Pediatric Patients: Teaching Old Drugs, New Tricks

Abstract: Objectives: The objective included characterization of innovative off-label use of medications FDA-approved for one or more indications to treat a totally different disorder or indication in pediatric patients. Gaps in pediatric therapeutics often result in off-label use and specifically, novel uses for existing medications, termed "drug repurposing". Drug information (DI) queries to a hospital Pediatric Medication Resource Center and difficulties in retrieving evidence-based information prompted a review of medication repurposing for pediatric patients Methods: A systematic literature review was conducted to retrieve publications describing repurposed medications in pediatric patients. Excluded were FDA approved indications used off-label in pediatric patients (e.g. different dose), pre-clinical data, adult use only and experimental use. Patient ages were categorized using FDA Guidelines. Evidence quality was classified using a modified American Academy of Neurology Level of Evidence. Results were analyzed using Chi Square at $P < 0.05$. Results: Over 2000 references were retrieved and reviewed. A total of 101 medications repurposed for novel off-label uses for pediatric patients were identified; 74 for children; 52 for adolescents. Neonates and infants were least likely to receive a medication for a repurposed use. Strong or intermediate evidence existed in 80.2% (81/101) of cases. The evidence was strong in 39.6%; intermediate in 40.6%; weak in 19.8%. No significant relationship was observed between the pediatric age group and strength of the literature. Most repurposed uses pertained to generics or widely used medications. Less than 5% of medications were first marketed after 2011. Implications/Conclusions: While not exhaustive, the present study represents the most comprehensive listing of novel uses exclusive to pediatric patients. Further research is needed to identify the frequency of repurposed uses. The valuable DI role of pharmacists in assessing repurposed uses is of expanding and increasing importance to ensure such uses are evidence-based.

PH02: Sukman Truc, S., Farquharson, K.A. and Salbu, R.L.

Order set changes aimed at improving appropriate prescribing in the elderly: preliminary results of a falls reduction program

Abstract: Objective: Falls in the hospitalized elderly are common inpatient accidents and medications are often the culprit. The objective of this study is to determine whether or not changing the default order-sets of certain medications to geriatric appropriate dosing resulted in a change in the actual doses prescribed to patients. Methods: In February 2014, default inpatient order-sets were adjusted for patients 65 and over for seven medications to be

more appropriate dosing regimens for the elderly population. A retrospective analysis was performed for three months prior to the order-set changes, and three months after, to see if this intervention changed prescribing patterns. Data collected included: medical record number, patient age, unit, origin of prescribing, first time dose, outpatient medication use, and order indication if available. Results: The change in order-sets for all medications, except for morphine, resulted in increased in frequency of appropriate prescribing. Frequency of appropriate prescribing increased (23% versus 40%) after the change in default order-sets. Overall prescribing of the medications (at any dose) was lower after the change in order-sets. Morphine had the most significant reduction in overall prescribing. Conclusions/Implications: The conclusions of this analysis indicate that changes in the default order-sets of medications known to cause falls in the elderly population resulted in more appropriate prescribing. Overall reduction in prescribing of these medications may indicate that the unit became more aware of medications that may place patients at risk of falls. Future steps include expanding this project to all units of the hospital to determine overall implication.

PHYSICAL THERAPY

PT01: Reddin, V., Cardone, A., Heim, M., Muhammad, W., O'Connell, W., Peaceman, A. and Driscoll, M.

Perceptions of Adherence to Home Exercise Programs Differ Between Physical Therapists and Patients

Abstract: Home exercise programs (HEPs) are integral to physical therapy treatment, although rates of adherence remain less than desired. The purpose of the current study was to identify whether PTs and patients views on adherence were different. Subjects were recruited from outpatient clinical sites listed in the Touro College DPT database. A response rate of 6% was received (N=104). Patients were required to be between 18-75 years old, receiving outpatient physical therapy, and prescribed an HEP. PT participation required a minimum of 1 year experience and valid PT license. A 15-question survey using a modified Likert scale was used to determine the individual perceptions of adherence of PTs and patients. For each question directed to the patient, a similar question was utilized to reflect the point of view of the PT. Mann-Whitney U (2-tailed) compared the differences in perceptions of adherence between PTs and patients, taking into consideration relative differences in age, gender, and educational background. This study's findings suggest that PTs considered their patients' everyday activities when designing HEPs while patients did not agree ($p<0.001$), PTs agreed that developing a mutually trusting relationship with patients would improve adherence while patients did not hold this view ($p<0.05$), and that patients also reported that they were honest with their PTs about their HEPs, while PTs felt they were not always honest ($p<0.001$). These differences in perceptions about adherence may contribute to the reported low adherence rates.

PT02: Crean, S., DeChane, T., Esposito, J., Perry, K., Kume, J. and Hagan, L.

Comparing the Near-Peer 2:1 Clinical Education Model to the Traditional 1:1 Model

Abstract: Clinical affiliations are critical to Doctor of Physical Therapy (DPT) education. The traditional 1:1 model includes 1 clinical instructor (CI) mentoring 1 student. The "near-peer" model pairs 2 students of different academic levels to 1 CI. The current study focused on perceptions of the educational value of the near-peer model held by participating DPT students compared to those who participated in the 1:1 model. Subjects were recruited through convenience sampling from the Touro College DPT Program. For the near peer group (N=2), the junior (JR) student entering their second affiliation was paired with a senior (SR) student on their final affiliation in the same clinic with the same CI. The control group included one JR and one SR entering their respective affiliations. Each participant submitted weekly journals over a 5 week period. Structured thematic analysis revealed concepts emphasizing comfort, relationships, education and confidence. Subjects' quotes were categorized as positive, negative or neutral. The clinical experience of the JR 2:1 cited a 93% incidence of positively coded responses compared to 47% of the JR 1:1. The greatest differences were observed in relationships, comfort and confidence favoring the JR 2:1 to the JR 1:1. The SR 2:1 reported fewer positive responses (67%) than the JR 2:1 or the SR 1:1(93%), suggesting each model

may provide different student clinical experiences, dependent upon their academic level. The results suggest that the 2:1 model could help to facilitate collaboration between students and works in concert with the traditional 1:1 model.

PT03: Corio, F., Troiano, R., Adduci, V., Capone, S., Fischer, R. and Keogh, A.

The Effects of Gait Training Using Rhythmic Auditory Cues on Temporal and Spatial Parameters of Gait in Individuals with Lower Limb Loss: A Pilot Study

Abstract: INTRODUCTION: Individuals with lower limb loss experience acute gross motor changes that may cause alterations in the recruitment of muscles utilized during ambulation. These changes often lead to a change in gait pattern. External auditory cues provided by a standard metronome have been proven effective in improving gait symmetry in various populations. The purpose of this study was to evaluate the effect of a metronome-walking program on gait symmetry in individuals with lower limb loss. METHODS: Two Participants were recruited using convenience sampling as well as by word of mouth. The experimental subject was administered a standard metronome and went through a training session with the metronome, was instructed in the in a 6-week walking program walking program, and performed a pretest on GaitRITE® to establish baseline measures. The control subject was asked to maintain their normal level of activity throughout the 6- week intervention period. At the conclusion of the intervention period, both subjects were post-tested on the GaitRITE® walkway system and specific parameters were analyzed. The effect of the metronome was assessed using percent change between parameters. RESULTS: The experimental subject showed a greater percent change in gait velocity, cadence, base of support, and double leg support when compared to the control subject. At the conclusion of the intervention period, the experimental subject exhibited a greater number of ratios closer to 1.0 compared to the control subject, which demonstrates improved gait symmetry. CONCLUSIONS: The results of this study suggest that a 6-week metronome-walking program may improve gait symmetry in individuals with lower limb loss

PT04: Brandt, L., Coffey, M., Franks, M., Joseph, L., Rosen, L. and Reddin, V.

The Role of Cadaver Dissection on Anatomy Retention in Physical Therapy Students

Abstract: Anatomy provides physical therapists with a foundation for their clinical education. Historically, anatomical education has been cadaver based but recently, this has shifted toward computer based models. Touro College's Physical Therapy program is taught on two campuses, Bay Shore and Manhattan. While similar anatomy syllabi are taught on each campus, the Bay Shore (BS) campus utilizes cadaver dissection while the Manhattan (NYC) campus utilizes computer based models. This study examines the role of cadaver dissection on student retention of anatomy over the three years of the doctor of Physical Therapy program. Students from the first year (2016BS=36, 2016NYC=33) and third year (2014BS=27, 2014NYC=30) were given retention exams to measure their basic anatomical knowledge and clinically applicable anatomical knowledge. Non-parametric statistical analysis indicated that there was no significant difference of anatomy retention when comparing campuses ($p=0.24$) and years of students ($p=0.85$). All students showed higher retention of clinically applicable knowledge. Although there was a significant correlation ($r=0.41$, $p<0.01$) between how well the student performed in the anatomy course and their score on the retention exam, overall scores for retention were low and participation in anatomy dissection did not seem to have an impact on the students' retention of anatomical knowledge. The finding that clinically relevant anatomical knowledge did show higher rates of retention suggests that the more students are able to use their knowledge in clinical scenarios the better they are able to retain it.

PT05: Marks, T., Raskin, J.M., Fioriello, D., Talreja, R., Rey, C., Isom, S., Garcia, R., Chan, D., de la Pena, J., Henry, S., Kopelovich, A., and Lee, H.

The Reliability and Validity of the Timed Stair Climbing Test as an Outcome Measure for Individuals with Pulmonary Disease

Abstract: Purpose/Hypothesis : There is a need for reliable, valid outcome measures applicable to patients with pulmonary disease. Existing stair climbing or step tests are difficult for pulmonary patients to complete. The purpose

of this study was to describe the Timed Stair Climbing Test (TSCT), a practical stair climbing test broadly applicable to patients with pulmonary disease and establish the reliability and validity of the test. Number of Subjects : Twenty-three subjects with documented pulmonary disease. Materials/Methods : The TSCT required that participants ascend and descend a 10-step flight of stairs within 30 seconds at a self-selected pace and stair climbing pattern. Investigators used a standardized script of instructions, remained at the bottom of the staircase and kept time with a stopwatch. Use of assistive devices, handrails and supplemental oxygen (if prescribed) were allowed. The number of steps completed was recorded. Participants were allowed to rest if needed; however, time continued to run. On the same day, participants completed a 6MWT following standard procedures. Intra-/inter-rater and test-retest reliability was established separately through videotape review of healthy subjects. Results : The Pearson Product Moment Correlation Coefficient was used to establish convergent validity of the TSCT with the 6MWT. A significant moderately strong correlation ($r = 0.68$, $p = .00$) was found. The TSCT demonstrated excellent intra-rater reliability (ICC = .988 - .991), inter-rater reliability (ICC = .995) and test-retest reliability (ICC = .910). In addition, there were no significant differences of the mean scores of dyspnea ($p = .658$) and RPE ($p = .292$) between the two tests. All subjects were able to complete both tests. There were no untoward events recorded. The power of the study was calculated to be $P = .90$. Conclusions : The results of this study establish convergent validity and excellent intra-rater reliability, inter-rater reliability and test-retest reliability of the TSCT. Supplemental findings of dyspnea and RPE seem to imply that the TSCT created no greater stress than that found on the 6MWT. The TSCT appears to have the potential to serve as a broadly applicable tool to measure performance of patients with pulmonary disease. Clinical Relevance : Based on this study, the TSCT provides clinicians with an easily conducted, brief, valid and reliable outcome measure of stair climbing ability. Stair climbing is an important activity of daily living and an essential skill for many urban dwellers. Patients and clinicians may be reluctant to address stair climbing because of its perceived difficulty. Avoidance of stairs can lead to decreased function and social engagement. The TSCT elicits subjective reports of stress similar to the 6MWT and was performed without incident by all study participants. The test can be administered by a single practitioner with minimal equipment and has been demonstrated to be safe for a range of patients with pulmonary disease.

PT06: Horbacewicz, J.S., Oriente, J., Seifried, E., Tooker, J., and Whitlow, S.

Personal Values of First Year Students in Nursing, Occupational Therapist, Physician Assistant, and Physical Therapist Education Programs

Abstract: PURPOSE: The purpose of this study was to determine a baseline for the personal values of students entering nursing, occupational therapy (OT), physician assistant (PA) and physical therapy (PT) fields. Establishing a base line of the values of health profession students can provide data on the type of person who enters these professions and enable longitudinal data to be generated regarding the effectiveness of an educational program in influencing those values. It can also facilitate future interprofessional collaborations. BACKGROUNDS/SIGNIFICANCE: Values shape the way one looks at the world and provide a framework from which one can make decisions. When personal values are consistent with the values of a given profession, patient satisfaction increases. In addition, healthcare practitioners are more successful when personal and professional values coincide. Little is known about the values students entering healthcare fields possess upon admission, or, additionally, what values they possess upon graduation. With the importance of interprofessional education and collaboration, it is critical to understand the values of future health professionals. SUBJECTS : 106 PA (31M, 75F), 65 PT (37M,28F), 23 OT (4M, 19F) and 19 Nursing (7M,12F) first year graduate students in Touro College participated in this study. METHODS AND MATERIALS: Subjects filled out an eligibility questionnaire and the Rokeach Values Survey (RVS) during their first semester of classes. The RVS measured subjects' hierarchical arrangement of two kinds of personal values, 18 terminal values and 18 instrumental values. All data was analyzed at the .05 level of significance utilizing IBM SPSS Version 21© ANALYSES : Descriptive statistics were used to summarize all demographic information. The mean ranking of each of the 18 terminal and 18 instrumental values was calculated. A Kruskal-Wallis test was conducted to evaluate differences in distribution among the students in the different health profession education programs. Post-hoc Mann-Whitney U tests were conducted to evaluate pair wise differences among the groups. RESULTS: Two terminal values, Health and Family Security, and one instrumental value, Honest, had the highest mean rank for all four programs. In addition, two terminal values, World of Beauty and National Security, and two instrumental values, Obedience and Imaginative, had the lowest mean rank for all four programs. Results of the Kruskal-Wallis revealed no significant difference in a majority of the mean rankings on the RVS between students

from the different health profession education programs ($p > 0.05$). There was a significant effect of Group on Value for five of the values. Four were terminal values and one was an instrumental value. For terminal values, there was a significant difference for Equality between Nursing and PA ($p=0.022$) and Nursing and OT ($p=0.007$), National Security between OT and Nursing ($p=0.026$), Self-Respect between PT and OT ($p=0.012$), and as well as True Friendship between PT and OT ($p=0.040$). For instrumental values, there was a significant difference ($p=0.027$) when comparing the ranking of Ambition between PA's and OT's. CONCLUSIONS: First year students of Nursing, OT, PA and PT programs overall share similar personal values when ranking from most important to least important. In addition, there was a general theme of values associated with benevolence being rated highest by all programs. Most differences were found in end-state or desired goals (terminal values) rather than the mode of conduct (instrumental values) to achieve these goals. Many of the same values that were ranked highly by students are seen in their respective profession's core set of values. This suggests that people may choose careers in which personal values are in line with those of their prospective profession.

PT07: Weiner, S.S., Weiser, S., Gibbons, M., and Vieira, D.L.

Identifying Determinants of Low Back Pain Behaviors

Abstract: BACKGROUND AND PURPOSE: Low back pain (LBP) remains the leading cause of work disability and a large public health problem despite attempts to minimize its impact. Patients with LBP are known to incur high health care (HC) costs and utilization. The objectives of this study are to systematically explore the literature and what is known about patient expectations of care, and the knowledge, beliefs and attitudes of patients regarding seeking HC for LBP. METHOD: The study used a mixed methods approach. Literature review: Inclusion/exclusion criteria were established for the literature search and review. A systematic literature search was performed. Two researchers performed the review, with discrepancies adjudicated by a third reviewer. Interviews: Subjects were recruited at the New York University Langone Medical Center Spine Center for a semi-structured interview developed by a multidisciplinary team of LBP experts. The purpose of the interview was to explore topics related to LBP that may drive HC utilization. Themes were extracted using a phenomenological qualitative research approach to build an operational description of patient knowledge of LBP, desired care and provider interaction. RESULTS: Literature review: The literature search yielded 1120 references, of which 47 were fully reviewed and 35 were deemed admissible. Key factors that drive patients with LBP to seek care include: Desire for information and reassurance, dissatisfaction with clinical encounters, seeking referral for an interventions, magnitude and impact of symptoms, positive clinician characteristics, and patient affect. Structured interviews: Ten structured interviews of patients with chronic LBP were completed (7 female), transcribed and coded for analysis. All but one subject (a physician) had sought care from more than one practitioner and all subjects were currently seeking care from a spine specialist. The major theme that emerged was that patients with LBP are driven to utilize HC due to misinformation, lack of information and dissatisfaction with HC encounters. CONCLUSION: The results revealed factors that drive patients with LBP to seek care and their expectations of care. Lack of information and misinformation form the basis upon which patients establish beliefs and make HC seeking decisions. Dissatisfaction with prior HC experiences compels patients to seek additional care. These subjects clearly described an eagerness to partner with their clinicians in their care, and a desire for accurate information and reassurance as a basis for making HC decisions. In the absence of answers to their questions and unmet expectations in the clinical encounter, patients become frustrated and feel the need to seek further care. CLINICAL RELEVANCE: This study revealed key factors that drive patients with LBP to seek care and their expectations of the HC encounter. The literature supports the data, and reinforces the need to increase the evidence-based approach to care, the efficacy of which has been repeatedly demonstrated. Clinician attitudes and beliefs limit adherence to LBP evidence-based guidelines, which may indirectly lead to chronicity and continued HC utilization. In the absence of answers to their questions and unmet expectations, patients feel the need to seek further care, thereby driving HC costs. Acknowledgement: The study was funded by a grant from the NY/NJ Education and Research Center-Pilot Projects Research Training Program (Award Reference 0253-6198-4609).

PT08: Weiner, S.S., Weiser, S., and Nordin, M.

Influence of Physician Gender on Treatment of Low Back Pain

Abstract: Background: Low back pain (LBP) is a prevalent and costly public health issue and a leading cause of disability. Improved outcomes have been shown with evidence based guideline (EBG) treatment. Yet adherence to EBG remains inadequate. Different practice styles have been associated with physician gender and are poorly understood. The purpose of this study is to investigate the effect of physician gender on the management of LBP. Objectives: This study was part of a larger study aimed at understanding nonclinical factors that affect physician management of LBP, including the effect of physician gender. Methods: Clinical vignettes were used to query physicians on prescription for acute nonspecific LBP, asking for treatment prescription in six different domains. All domains are those for which EBG provide recommendations. Each physician read one vignette. The independent variables were patient gender, socioeconomic status (high/medium/low) and patient presentation (somatic/affective) and the outcome was treatment recommendation. Results: A sample of 284 primary care physicians participated in the study (male=144; 15 unreported). Six prescribed treatments were associated with physician gender. Male physicians were ten times more likely to refer to an orthopedist ($p=0.004$) and 2.5 times more likely to refer to a physiatrist ($p=0.005$), both 'against EBG' recommendations. Treatments associated with pain relief were more often recommended by female physicians, including muscle relaxors ($p=0.01$) (against EBG), thermal modalities ($p=0.01$) and manipulation ($p=0.03$), as were the use of CT scans for diagnostic purposes ($p=0.01$) (against EBG). Conclusion: Differences in treatment were observed with no clear explanations as to why. Empathy is associated with female caregivers and may provide insight. As concerning as the variations in care, is that all physicians provided care associated with the progression of LBP to chronicity. Further studies are needed to understand physician managing LBP and to promote EBG care of this prevalent and costly condition. Acknowledgement: The study was funded by a grant from the NY/NJ Education and Research Center-Pilot Projects Research Training Program (Award Reference 0253-6198-4609).

PT09: Schreyer, R.; Abiog, A., Aschenbrand, E., Grell D., Morris J., Patzner C., and Garcia, R.K.

The Effect of REST Therapy on Hypertonicity and Function in Patients with Neurologic Dysfunction: A Case Series

Abstract: BACKGROUND/PURPOSE: Restricted Environmental Stimulation Therapy (REST) has been shown to induce a strong relaxation effect in normal populations. The purpose of this study was to explain and describe REST on hypertonicity, balance and gait, in individuals with neurologic dysfunction. GUIDING QUESTIONS: Would REST affect hypertonicity in individuals with neurologic dysfunction? Would REST affect functional outcomes in individuals with neurologic dysfunction? CASE DESCRIPTIONS: Five participants, each clinically diagnosed with one of the following: Parkinson's disease (PD), cerebral palsy (CP), multiple sclerosis (MS) and cerebrovascular accident (CVA), were recruited from a physical therapy clinic in New York City. All individuals presented with hypertonicity of the lower extremity muscles, as determined by the Modified Ashworth Scale. MATERIALS AND METHODS: Pre-test velocity, cadence and step length measurements were recorded with the GAITRite™ Portable Walking System, functional mobility was measured with the Timed Up and Go (TUG) and spasticity was assessed with the Modified Ashworth Scale (MAS). Each participant then received a 60-minute REST treatment session. Post-test measures were taken immediately after the completion of a REST treatment session. OUTCOMES: All participants showed a decrease in MAS scores, indicating a decrease in spasticity and in TUG time, indicating an improvement in functional mobility. The greatest decrease was seen in the participant with CP, in both lower extremities from 2+ to a 1+. The greatest improvement in TUG time was in the participant with CP, from 53.1 seconds to 46.5 seconds. Increases were seen in gait velocity, cadence and step length, post-REST therapy. The greatest increase in gait velocity was shown in the participant with PD, an improvement from 112.5 cm/s to 126.5 cm/s. The greatest increase in cadence was shown in the participant with PD, from 94 steps/min to 101 steps/min. The greatest increase in step length was shown in the participant with CP, an improvement in right lower extremity step length from 28.32 cm to 37.39 cm. DISCUSSION: Spasticity, TUG, gait velocity, cadence and step length all improved after REST therapy. The outcomes of this case series suggest that REST therapy may be a viable treatment for patients with hypertonicity,

though more research needs to be conducted through a randomized control trial. CLINICAL RELEVANCE: REST therapy appears to be a possible adjunct to physical therapy as a method of reducing hypertonicity and improving functional mobility before treatment sessions.

PT10: Euaparadorn, E., Burger, E., Edelman, R., Lee, J., Manning, E., Patel, N., and Garcia, R.K.

The Short Term Effect of High-Velocity Low-Amplitude Thrust (HVLAT) on Ankle Eversion Strength

Abstract: Background: Lateral ankle sprains affecting the ankle evertors are the most common injuries resulting in referrals to clinicians and inhibiting athletes from participating in sports. It has been established in the literature that a spinal HVLAT immediately increases strength to the extremities. However, the short term effects of the spinal manipulation on strength are unknown. As a potential preventative measure, the purpose of this balanced, randomized, controlled study was to measure the immediate and short term effects of a spinal HVLAT on bilateral ankle eversion strength. Previous studies have not yielded positive short or long term effects of a manipulation on peripheral lower extremity musculature. Subjects: A total of 55 healthy subjects participated in this study. A total of six subjects were excluded from the study, and twenty-one were randomly placed in the experimental group and twenty eight in the control group. Materials/Methods: Fifty-five healthy subjects between the ages of 20 to 59 with no recent history of ankle pathology or contraindications to spinal manipulation were assigned to either a control or experimental group via balanced randomization. The experimental group received an HVLAT manipulation to the L5/S1 vertebrae, and the control group received a sham treatment. Ankle evtor strength was measured at baseline, immediately following the intervention, and at a 20-minute follow-up regardless of group assignment using isometric eversion contractions against a Microfet 2 Dynamometer. Results: Our results found a significant percent-change increase in ankle evtor strength in the experimental group versus the control ($p=.017$). The mean percent change of right ankle evtor strength was 21.88% (experimental) and 2.01% (control) immediately following the intervention. The mean percent change of left ankle evtor strength was 30.53% (experimental) and -4.71% (control) immediately following the intervention ($p=.000$). The significant percent change strength increase was maintained at the 20 minute follow-up for the right ankle evtor strength ($p=.234$) and left ankle evtor strength ($p=.284$), indicating the strength gain was maintained. Discussion/Conclusion: The findings of this study suggest that a single HVLAT to the L5/S1 vertebral region may be effective short term intervention for increasing the strength of the ankle evertors when a HVLAT is delivered to the lumbar region. Clinical Relevance: The clinical relevance demonstrates that increasing strength in the periphery may be achieved by utilizing an HVLAT to the lumbar spine. This technique is a quick technique that displays a swift strength change that is maintained in the short term. This increase in strength will clinically allow for an increase in ankle stability and may minimize ankle sprains.

PT11: Garcia, R.K., German, S., Schoenblum, C.B., and Sloves, B.

Participation in Extracurricular Activities of Children Ages 4-6 Years with Cerebral Palsy Across Various Cultures: A Case Series

Abstract: Purpose: Cerebral palsy (CP) is the most common cause of significant motor impairment in childhood, occurring in 1 in 500 births, representing a large percentage of children with disabilities. The purpose of this study was to describe cultural factors including ethnicity, religion, family education, and child gender, as they relate to participation in extracurricular activities in children with CP using the Children Participation Questionnaire (CPQ). Subjects: Four adults, representing four children, aged 4-6 years with CP, participated in this study. Materials/Methods: A packet containing the cover letter describing the study, consent form, CPQ, and demographic form was sent directly to families, schools, and organizations that serve children with CP for distribution to parents. Results: Higher levels of participation diversity, measured by number of activities in which a child participated in, were seen along with higher levels of child enjoyment. Across all activity categories, child enjoyment in activities was greater than reported parental satisfaction. Increases in age reflected greater levels of participation in extracurricular activities. Conclusion: Participation diversity was not dependent on level of child's dysfunction, as the subjects needing the most assistance were typically involved in a greater number of activities. Due to a small and

homogenous sample size, no distinctions in participation were seen in regards to child gender, ethnicity, religion, and parent education. Clinical Relevance: Describing such factors can lead to increased advocacy for children with CP and promotion of socialization and social support. Understanding of family cultural factors, as they pertain to the participation in extracurricular activities of children with CP, can potentially guide clinical strategies and family education.

PT12: Marks, T., Henry, A., Protopapas, T., Quan, E., and Garcia, R.K.

Examining the Underutilization of Outpatient Cardiac Rehabilitation in Physical Therapy

Abstract: Background and Purpose: Studies show that eligible patients are not attending Outpatient Cardiac Rehab (OCR), despite its proven benefits. Those who qualify for OCR, but don't attend, are at a higher risk for re-hospitalization, which increases the stress on the healthcare system. The purpose of this study is to determine the degree to which Physical Therapists (PTs) are aware of OCR as a resource and what factors may inhibit those who are aware of OCR from recommending it to eligible patients. Materials/Methods: Our research design is a descriptive survey. Three hundred and nine surveys were returned after sending out a paper survey to a list of 1,000 randomized PTs received from the American Physical Therapy Association. Results: Fifty-four percent of respondents have not educated or encouraged a patient to attend OCR. Twenty-nine percent believe they cannot recognize the benefits of OCR and 68.9% of respondents are not familiar with insurance guidelines for OCR. Thirteen percent of respondents stated they were not educated about OCR in their PT curriculum, and 13.6% believe there is no scientific evidence supporting OCR. Conclusion: There is a large gap in the knowledge-base of practicing PTs with regards to cardiac rehabilitation. This includes a lack of understanding of insurance guidelines, the latest literature, and overall benefits of the intervention. Clinical Relevance: If PTs are unaware/uneducated of the benefits and treatment population at risk for cardiac disease, patients are unlikely to be referred for OCR and are at increased risk for secondary sequelae.

PT13: Garcia, R.K., Lo, F., Morabito, M., Oakes, M., Saleh, P., Sum, R., and Nussbaum, J.

The Effects of Usual Footwear on Gait and Dynamic Balance in Community-Dwelling Older Adults

Abstract: Purpose/Hypothesis: Prevalence of falls in older adults can be largely due to deterioration of balance and neuromuscular control. Research has provided evidence that footwear influences postural stability and balance. The purpose of this study was to determine the effects of usual footwear on selected gait parameters and dynamic balance in community-dwelling older adults (CDOA). Subjects: Twenty-seven CDOA ages 65 and older participated in this study. Materials/Methods: Our repeated measures design examined gait parameters and balance as measured using the GAITRite® Portable Walkway System and the Dynamic Gait Index (DGI), respectively. Individuals performed both tests with and without their usual footwear. Activities were randomized to decrease order effects. Paired t-test and Wilcoxon Signed Ranks Test were used to determine differences between the conditions for gait parameters and DGI scores. Results: Significant differences were found between step length, stride length, base width, double support time, cadence, and velocity between barefoot and usual footwear conditions ($p = .000-.023$). For DGI values and single support time, no significant differences were found ($p = .092-.246$). Conclusion: Usual footwear improved quality of select gait parameters. However, no significant differences were found for dynamic balance between the usual footwear and barefoot conditions in CDOA. Clinical Relevance: Usual footwear seems to improve gait performance in CDOA indicating that the choice of shoe is instrumental in function. However, further study needs to investigate dynamic balance and usual footwear in this population.

PT14: Schreyer, R., Feder, A., Kaczmarczyk, M., Shah, M., Sinay, D., Wu, J., and Garcia, R.K.

Effects of Sensorimotor Exercise on Rigidity and Functional Mobility in Adults with Parkinson's Disease

Abstract: Purpose/Hypothesis: A decrease in basal ganglia activity and dopamine output is proposed to cause the symptoms of Parkinson's Disease (PD) that limit quality of life. Sensorimotor activities with large rotational patterns are thought to alter the basal ganglia and provide relief from rigidity and decreased functional mobility. The purpose of our study was to compare the efficacy of traditional exercises against sensorimotor agility exercises. Our study hypothesized that sensorimotor exercises will increase larger movements in adults with PD and lead to improved functional mobility. Subjects: Ten subjects with mild-moderate level PD were randomized into a control group of traditional physical therapy exercises or an experimental group of sensorimotor activities. Materials/Methods: All subjects actively participated in three 10-minute exercises with equal rest breaks. Level of rigidity impacting functional capacity was measured using the mini-BESTest, the Modified Ashworth Scale (MAS), goniometry, and the Four Square Step Test (FSST). Results: MAS for RUE showed significance ($p=0.015$) and RLE ($p=0.026$), indicating a decrease in muscle tone. The Dynamic Gait sub-section of the miniBESTest showed significance ($p=0.041$), particularly with activities involving head turning. Conclusion: Based on these results, sensorimotor activities may show improvement within some dynamic functional activities. Clinical Relevance: While results did not show improvements in many of the outcome measures, subjects displayed improved axial and head rotations during ambulation and were able to complete the task with greater fluidity of movement due to intentional rotational exercises.

PT15: Euaparadorn, E., Banome, M., Beleck, E., Liebowitz, N., Schlesinger, F., Yoo, D., and Garcia, R.K.

Effects of a Left-sided Lumbar High-Velocity Low-Amplitude Thrust (HVLAT) versus a Right-sided Lumbar HVLAT on Ankle Eversion Strength in Healthy Adults

Abstract: Purpose / Hypothesis: Ankle sprains are the most common musculoskeletal injury seen by primary-care providers. A contributing factor is insufficient ankle eversion strength. The purpose of this study was to examine the effects of a left-sided lumbar HVLAT versus a right-sided lumbar HVLAT on ankle eversion strength in healthy adults. Subjects: Thirty-four healthy adults between the ages of 20 and 59. Materials/Methods: A randomized controlled clinical trial was performed in which the participants randomly received an HVLAT on either their left or the right side. The MicroFet2 Dynamometer® was used to measure ankle eversion strength during the initial test and after the intervention. Results: There were no significant differences found between right ($p = .586$) and left ($p = .964$) percent change in ankle eversion strength after the HVLAT manipulation. Conclusions: Although there were increases in eversion strength on both sides, it was independent of the side of manipulation. There were no significant differences in ankle eversion strength between the side that received the HVLAT and the contralateral side. Clinical Relevance: Our results suggest that a therapist can evoke a strength gain on the desired side by performing an HVLAT to either the ipsilateral or the contralateral side.

PT16: Kume, J., Lopez, A., Gutierrez, Y., Kalmanowitz, B., Mosca, L., Oddo, M., Thomas, L., and Sukumaran, V.

Efficacy of a composite exercise program to improve functional performance in children with ASD

Abstract: Purpose/Hypothesis: Children with autism spectrum disorder (ASD) often demonstrate difficulties in motor, social and communication skills. Combined, these deficits can make it very difficult for these children to integrate effectively in typical activities of daily life (ADLs). Effective interventions for improving functional motor performance

have not been well reported in the literature. The purpose of this study was to determine the efficacy of the Inclusive Sports and Fitness composite program in overall task-oriented motor performance. Materials/Methods: Children with ASD (N=6) were recruited via snowball sampling to complete a 12 week after-school exercise program. The program consisted of five composite activities including exercise, sports, yoga, social skills group, and a metronome training program offered twice a week for 1.5 hours per session. Just prior and following this program, children were assessed with the Bruinsky-Oseretsky Test of Motor Proficiency (BOT-2). Data analysis using paired t-test (2 tailed, 95% probability) were used after confirmation of meeting parametric assumptions. Results: Overall composite BOT-2 scores indicated a significant improvement in functional task performance following participation of this program ($p < 0.05$). Although 7 out of 8 subtest scores improved post-intervention, only significant differences in balance ($p = 0.04$) and running speed and agility ($p = 0.04$) were noted. Conclusions: In this pilot study, a composite program which provided varied types of structured physical activity, metronome training and social interaction significantly improved motor function for children diagnosed with ASD. Clinical Relevance: The current pilot study suggests that a composite exercise program may be an effective strategy for significantly improving functional task performance.

PT17: Weiner, S.S., Engel, M., Hoffman, K., Wolf, J., Yegiazarova, A., Du, X., and Sheikhzadeh, A.

The Effects of Z-Coil® Shoes on Spatio-Temporal Gait Parameters and Muscle Activity in Healthy Adults

Abstract: Purpose/Hypothesis: This study aimed to explore the effect of the Z-Coil® shoe, a therapeutic shoe, on gait parameters and lower extremity muscle activity to better understand the therapeutic value of the shoe's unique design. Subjects: Twenty-six subjects (13 females, 13 males), ages 18-54 years, with no current lower extremity injuries or surgeries within the past six months, participated in the study. Methods: Subjects walked along a six meter walkway under three different conditions: barefoot, wearing Z-Coil® shoes with the spring unlocked and wearing Z-Coil® shoes with the spring locked. Wireless surface EMG measured muscle activity of selected lower leg muscles and spatiotemporal gait parameters were measured using the GAITRite® Portable Walkway System. Shoe acceptability and shoe comfort was determined by visual analog scale (VAS). Six trials were performed by each patient, one trial with each footwear condition recorded for both GAITRite® and surface EMG. Results: A significant difference was found for all gait parameters comparing barefoot and shod (spring unlocked, spring locked) trials. No differences were found in EMG activity between barefoot and shod (spring unlocked, spring locked) trials. Conclusion: Z-Coil® shoes were found to have a significant effect on various gait parameters when compared to barefoot walking. The spring lock, however, had no effect on gait parameters or muscle activity of the lower leg. Further research must be done on the Z-Coil shoe to determine if there is any therapeutic value to the shoe. Clinical Relevance: Therapeutic shoes are often marketed to individuals as a way to reduce symptoms and restore function. Clinicians, however, must be aware of any biomechanical effects of these shoes. Evidence based information is necessary to guide patients towards effective and optimal self-care strategies.

PT18: Hayes, J., Sofer, R., Kume, J., Arie, I., Chun, H., Kirsch, J., Lo, J., and Sanders, T.

Relationship of Gait Speed with Discharge Planning in the Subacute Setting

Abstract: Introduction: The use of gait speed, often referred to as a "sixth vital sign" (Fritz, 2009), has been suggested to be an accurate outcome measure for patient evaluation in the rehabilitative clinical setting. Discharge planning particularly, has often been a challenging determinant as there is no objective guidelines that addresses discharge planning from the subacute setting. The purpose of this study was to assess the potential efficacy of gait speed as a predictor for appropriate referral for discharge setting. Materials and Methods: Subjects (N=19) were recruited from the subacute unit at Gurwin Rehabilitation Center. Gait speed (m/s) for 7m walk was recorded at initial evaluation, 1-2 weeks during rehabilitation and just prior to discharge. Parametric analysis compared gait speeds at initial evaluation and at discharge (95% probability, 2- tailed). Single sample hypothesis testing was used to compare study's gait speed values to normative ones cited in the literature. Results: Final gait speeds (0.68 ± 0.24 m/s) were significantly faster than those recorded initially (0.53 ± 0.29 m/s). Individual patient diagnoses did not significantly

affect this outcome. Mean gait speeds at discharge for women in this study were not significantly different for 60-69 and 80+ normative values previously cited for community dwellers, but were still significant for women (n=8) in the 70-79 range. Limited sample size precluded extending this comparison with normative values for men. Conclusion/Clinical Relevance: This study's findings suggest that gait speed can be used as a potential predictive outcome measure for discharge planning in a subacute setting.

PT19: Burke, C., Trebing, S., Kume, J., Gambino, J., Kim, M., Steinkraus, P., and Therrien, M.

The Efficacy of Combined Therapeutic Protocol of Large-Amplitude Movement, Exercise, and Balance Training on Patients with Parkinson's Disease

Abstract: Purpose/Hypothesis: Parkinson's Disease (PD) is a neurological disease associated with several clinical symptoms which have been suggested to be ameliorated with intensively structured and varied exercise-based protocols. The current study assesses the efficacy of such protocols following a 2-3 times per week schedule that reflects traditional physical therapy regimens. Methods: Subjects with PD receiving physical therapy in an outpatient neurologic clinic were recruited (N=9). Inclusion criteria included individuals who were cognitively able to comprehend simple directions and minimally ambulate 10 meters with no more than supervision. Pre- and post-intervention measurement of the Berg Balance Scale, the Timed Up and Go (TUG) and gait characteristics (with GAITrite walkway system) were done using a 10-14 session paradigm consisting of large-amplitude movements, therapeutic exercise (including those emphasizing axial rotation), cardiovascular training, general balance and ambulation activities. Hoehn and Yahr (H&Y) stage assessments (Stage I, n=3; Stage III, n=6) were included to discern differences in outcome measures as a function of disease severity. Results: Both gait velocity(cm/s) and cadence (steps/min) were significantly increased post-intervention for individuals in the H&Y stage III compared to those with stage I ($p<0.05$, Wilcoxon, two-tailed). No significant differences were noted in TUG, Berg, or left/right step length ratios (to assess one aspect of gait symmetry). Conclusion: This pilot study suggests that significant improvements in gait characteristics may be obtained following a "combined protocol" intervention. Improvement was noted for more severely presenting individuals (H&Y Stage 3) as compared to those with more mild clinical presentations (H&Y Stage I).

PSYCHOLOGY

Psy01: Korsakova-Kreyn, M.

Bach, Escher, and Mental Rotation: A Study in the Perception of Visual and Melodic Congruency

Abstract: Among the most fascinating aspects of music are the quasispatial properties of tonal space and structures. For instance, any conventional melody can be visualized as a line made of ups and downs. Such melodic contour can be "bent" by tonal forces, and all its melodic intervals can be "mirrored." Certain musical compositions, such as Baroque fugues, resemble divisions on a plane, such as in M. C. Escher's tessellations. We hypothesized that the cognitive processing of these transformations may draw on spatial abilities developed for visuospatial reasoning. We conducted a behavioral study that compared the perception of congruency of 3D geometrical figures and tonal melodies. The visuospatial task used a short replica of stimuli from the Shepard and Metzler (1971) study in mental rotation, whereas a set of melodic stimuli was selected from the clavier compositions of J. S. Bach. In addition, the participants performed a control task on timbre judgment. Performance was positively correlated among the three tasks overall (for visual and melodic spatial tasks, $r = .40$), but the pattern of correlations differed between sexes. The results suggest that males are generally proficient at spatial transformation tasks and use those specific abilities in performing the melodic task. For females the results suggest the involvement of more general cognitive mechanisms and the effect of crystallized intelligence in solving the melodic transformation task. The obtained results converge

with previous investigations that found gender effect in the visuospatial mental rotation task. Our study provides new information about gender effect in music perception.

Psy02: Comerchero, V.A., Canto, A., Jantz, P., and Pierson, E.

Cultural Perspectives on Grief Interventions for Families Altered by TBI

Abstract: Grief frequently emerges in families altered by TBI. Within TBI affected populations grief reactions are often manifested in the form of ambiguous loss. This poster session will present psychology practitioners and researchers with evidenced based strategies adapted from other grief interventions with the goal of enhancing practitioners' ability to treat TBI associated grief. Culturally sensitive interventions addressing the unique factors associated with ambiguous loss will be emphasized. Implications for practice and research are discussed throughout the session.

Psy03: Rachel, K.

The Relationship between Cognitive Styles, Choice of College Major and Gender

Abstract: The research is guided by empathizing-systemizing (E-S) theory developed by Simon Baron-Cohen. Baron-Cohen proposes that people differ in the way they process information and in their capacity to take more interest either in people or in systems, therefore people can be classified along two dimensions: empathizing (E) and systemizing (S). People who are Empathizing have their interest focused more in people; they are sensitive to cognitive and emotional information of others and are capable of responding with appropriate emotions. People who are Systemizing are more interested in systems, in analyzing or constructing them. They are sensitive to patterns, rules and relationships between elements. To measure differences between people and to measure the extent to which a person is more empathizing or systemizing, Baron-Cohen and his colleagues developed the Empathy Quotient (EQ) and the Systemizing Quotient (SQ). The E-S theory developed from Baron-Cohen's work with autism where he hypothesized that the autism spectrum is an expression of extreme systemizing. He also extended it to fit the "extreme male brain theory of autism and Asperger syndrome". Both are associated with below-average empathy and average or above-average systemizing. The E-S theory is also connected to gender differences, whereby females in the general population tend to be more empathizing and males more systemizing. Since academic majors require different cognitive styles, the research compares empathizing versus systemizing tendencies with the choice of academic major and gender.

Psy04: Goldschein, H., Edelman, J., and Feder, N.

Rabbinic Pastoral Counseling and Community Size

Abstract: Pastoral care and counseling continues to be incorporated in diverse religious sects including Judaism. Throughout the last decade, pastoral care and counseling training programs have been incorporated in the curriculum of few rabbinical ordination programs. Previous research has not quantitatively examined the content and frequency of the content of orthodox pastoral care and counseling settings. This research originates from the first program evaluation of a modern orthodox pastoral counseling program. 20 interviews of graduates of the program, who became modern orthodox rabbis, were conducted. The interviews were formulated into surveys and distributed to all (84) graduates. The surveys asked the rabbis to rate the types of pastoral cases that they encountered within the past year according to frequency. Then we observed whether the occurrences were related to the size of the community. Through the program evaluation, the primary components necessary for modern orthodox rabbis as pastoral care and counselors providers are identified. In conclusion, this research helps improve precision of rabbinical pastoral training programs and services.

SOCIAL WORK

SW01: Zelnick, J. and Abramowitz, M.

Privatization on the Frontlines: Differential Impacts among Paid Human Service Careworkers and Implications for Workers and Clients

Abstract: Background: The human service workforce shares a mission to serve low-income vulnerable populations but is stratified by education, licensing, race/ethnicity, gender, and public and private sector agencies with different contracting and financing arrangements. We used a workforce survey to examine how privatization has impacted the human service workforce. Methods: The Human Service Workforce Study was developed in collaboration with 6 non-profit, labor, coalition and media partners. Eligible participants included human service sector workers in the greater New York City region. An electronic survey was distributed among human service workers in New York City February-October 2014 using direct e-mails and partner websites. Results: 2,468 human service workers including 82.4% women, 52.7% white and 46.3% people of color, 48.7% frontline staff, 27.4% public sector and 33.9% unionized workers participated in the survey as of January 15, 2015. 53.3- 88.2% of participant's indicated that austerity (e.g. staff cut backs), managerialism (quantifiable program outcomes), were highly problematic in their workplaces. Managers were more likely to report on policy changes, while frontline workers were more likely to report feeling the impacts of workplace restructuring, especially on their health, well-being and job satisfaction. Stratified results show interesting differences by race/ethnicity, gender, and workplace setting. Discussion: Differential impacts budget cuts, social service and workplace restructuring are a chief concern in human service work that both delivers vital care services to diverse and vulnerable populations and provides jobs for many from those same communities. New policies aimed at better service delivery should account for the impact on staff.

SW02: Otuyelu, F.

Readiness Resources and the Social Emotional Development of Kindergartners: An Ecological Perspective

Abstract: School failure is a social issue that touches many aspects of society and the profession of social work. The costs of school failure are lower earning potential, higher rates of incarceration, poor health, lower life expectancy and higher consumption of public resources (McKinney & Company, 2010; Education Equality Project, 2010; Fiscella & Kitzman, 2009). School readiness resources have the potential to bridge the school achievement gap, thus addressing the issue of school failure. The purpose of this study is to determine whether identified groups of readiness resources in schools, communities and the family are positively associated with teachers' and parents' perceptions of social-emotional development at the beginning of kindergarten. The study is descriptive utilizing a cross sectional design. The data is obtained from the first wave of the Early Childhood Longitudinal Study-Kindergarten with a sample size of 21, 409. A multiple regression analysis was conducted to determine whether readiness resources were associated with social/emotional development at the beginning of kindergarten. Findings indicate some school readiness resources are associated with social and emotional development at the beginning of kindergarten. Social work interventions need to target resources in the family and community implementing multi-pronged approaches in order to address the issue of school failure.

SW03: Kwong, K.M.K.

Effects of Prolonged Separation and Reunification upon Chinese Immigrant Parents and Children

The purpose of this study is to assess the attitudes, perceptions, and experiences of Chinese immigrant parents in New York City regarding reverse-migration and reunification and assess the possible impact of this prolonged separation and current family circumstances upon the family wellbeing and child's adjustment. An exploratory research methodology was used. Narrative data from in-depth interviews were studied qualitatively employing

technical procedures based on the grounded theory approach. The analytical process was based on immersion in the data, repeated codings, and comparisons of data. The sample included 18 Chinese immigrant families who had sent their American-born children to China to be raised and have reunited with their children. All interviews were audiotaped and transcribed. Data analyses revealed specific themes that included parent-child relationship and communication, challenges these parents face, perceived benefits and consequences of reverse-migration separation, child's physical and emotional adjustments, and specific parenting practice that may contribute to more positive reunification experience. This study adds to the much needed literature on specific needs of these families by looking specifically what unique circumstances related to reverse-migration separation, parenting practice, and related family risk factors that may impact on parent-child relationship, child behavior, and parent well-being. Understanding the approaches these families used to adapt and cope with their life challenges helps inform practitioners' thinking about service strategies for these families. More specific assessments with these families in child care, school, and health care settings are much needed to prompt immediate follow-up and intervention to meet the specific needs of these families.

SW04: Baez, A., Rodriguez, V., and Suarez Espinal, C.

BCC/CUNY College Discovery Program, College Student Inventory and Retention of At-Risk Students

Abstract: The College Discovery (CD) program was established within the community colleges by Board of Higher Education's resolutions to increase access to higher education for at-risk students, i.e., with lower academic standing than usually required for college admissions. Among the CUNY community colleges, Bronx Community College Bronx Community College's College Discovery Program is committed to meeting the needs of at-risk students. The vision is to provide creative solutions to address persistence and retention. The purpose of this study was to assess the risks and protective factor of high risk, low income, first year students at Bronx community college enrolled in the College Discovery program. The study was a qualitative retrospective study of 281 freshmen students enrolled from the Fall of 2012 to the Fall of 2013. to identify Persisters ($n = 170$) and Non-Persisters ($n = 75$). The College Student Inventory (CSI) of the Noel Levitz Retention System was used to collect data on student's self-reported academic, personal and social experiences in three categories: Academic Motivation, General Coping Skills and Receptivity to Support Services. There were two major findings: The retention rate for Persisters was 70.7% and 29.3% for Non-Persisters. The second important findings was the predictive power of the Overall Risk Index of the CSI. The Overall Risk Index significantly differentiated between for many of the variables, such as High School GPA, Current Grades, Academic Factors, Sociability, Personal Counseling, etc. The conclusions reached is the value of the CD program and CSI in improving retention for at-risk community college students.

SW05: Earle, M.J.

Can You Hear Me Now? The Importance of Instructor Presence and Engagement

Abstract: Introduction Professor presence and engagement are considered key components of overall student satisfaction with blended and online courses (Lim, Morris, Kupritz,2007; Napier, Dekhane, Smith, 2011). This poster will review a study of instructor presence and engagement in Touro College's Graduate School of Social Work's MSW program's blended and traditional courses. The core research question is: does the inclusion of online course content and reduced face-to-face instruction time within a blended format negatively affect social work student perceptions of instructor presence and engagement? Methods Students in all courses were asked to complete course evaluations in the Spring and Fall semesters from 2012-2014. Along with standard assessment questions inserted by the institution at large, course evaluations included nine items to evaluate student perceptions of professor presence and engagement. Answer choices ranged from 1 = "Strongly disagree" to 5 = "Strongly agree". As defined by the MSW program, "blended" sections of courses contained a range of from 20 to 65 percent of their content presented using online tools, with a parallel reduction in face-to-face time in the classroom. A total of 3,847 surveys were collected between the Spring 2012 and Spring 2014 semesters. Means were computed on each of the nine individual items for each course section, and then aggregated before comparing responses from traditional and blended sections. Study results indicate students' positive response to instructor presence and engagement with the

introduction of online content particularly when instructors purposefully planned for presence and engagement in a blended format.

SPEECH

SP01: Lazarus, A., Yifat, D., Fishman, P, Glazer, J., Lesser, N., Natanelova, Z. and Oliveira, G.

What's the Pitch of the Sales Pitch?: Preliminary Findings

Abstract: The purpose was to examine how vocal pitch affects a buyer's interest. Thirty three individuals (mean age=30.6), 13 males and 20 females, participated. Two professional voiceovers, a male and a female, recorded a 40-second advertisement for a fictitious product. The pitch of the audio clips was manipulated up and down one and two semitones (GarageBand software). The mean speaking fundamental frequency of the male's habitual voice clip was 162.9 Hz, and that of the female's was 234.6Hz. The audio clips were randomly presented to the naïve listeners as follows: habitual voice, 1 and 2 semitones higher and 1 and 2 semitones lower than the habitual voice for the male and female recordings. Participants were asked to listen separately to the two sets of 5 samples each and choose two samples from each set: the voices they were most likely and least likely to purchase the product from. Both the male and the female habitual voice audio clips were chosen by the subjects as the sample voices from which they were most likely to buy (male-clip: 33.3%, $p=0.062$; female-clip: 39.4%, $p<0.001$). The audio clips that the subjects were least likely to buy from in both the male and female sets were the samples that were two-semitones higher (male-clip: 51.5%, $p<0.001$; female-clip: 72.7%, $p=0.025$). Results show that vocal pitch plays an important role in the buyer's decision: High-pitched voices have a negative impact on the buyer's interest. The higher the salesperson's pitch, the less likely the buyer is to complete the purchase.

SP02: Oliveira, G., Davidson, A., Holczer, R., Kaplan, S. and Paretzky, A.

The Use of Glottal Fry in Spontaneous Speech of Young and Middle-Aged American Women

Abstract: The purpose was to compare vocal fry use in spontaneous speech of young and middle-aged American women. Subjects were 40 American women; 20 aged 18-25, and 20 aged 35-50. Participants were asked to describe how to do the laundry and make a peanut butter-jelly sandwich. The acoustic parameters analyzed were: mean, minimum and maximum fundamental frequency (F0), glottal fry/minute ratio, and the sentence position of glottal fry. Minimum F0 clearly showed that there was vocal fry in their spontaneous speech samples. Minimum F0 was 74.9 (SD=4.3) for the younger women and 73.10 (SD=6.6) for the middle-aged women ($p=0.305$). Maximum F0 was 452.1 (SD=65.0) for the younger women and 457.9 (SD=69.2) for the middle-aged women ($p=0.785$). Younger women tended to exhibit more glottal fry in the middle of the sentence in spontaneous speech. The mean glottal fry for the medial position was 7.1 (SD=5.5) for the younger women and 4.9 (SD= 5.0) for the middle-aged women ($p=0.205$). The mean glottal fry for the final position was 5.5 (SD= 4.1) for the younger women and 4.5 (SD= 4.1) for the middle-aged women ($p=0.446$). The mean glottal fry/minute ratio for young women was 14.55 (SD=6.4), and for middle-aged women was 11.55 (SD=7.0) ($p=0.168$). Both groups presented with vocal fry in their spontaneous speech, showing that vocal fry is becoming more prevalent and is influencing not only the way young adult women speak, but also the way middle-aged women speak.

SP03: Ryabov, R., Sapozhnikov, M., Wohl, S., Trachtenberg, M. and Oliveira, G.

Vocal Characteristics of Russian-English Bilinguals: Preliminary Findings

Abstract: The purpose was to investigate differences in the vocal characteristics of Russian-English bilingual individuals in their native and second language. Eleven individuals (mean age=42.8), 5 males and 6 females,

participated. They are all emigrants to the US (mean age of immigration: 18.4) and have completed at least an elementary school equivalent in their native country. Only participants that were proficient in speaking, understanding, reading and writing were included. Participants completed a self-assessment questionnaire that investigates how they perceive their communication characteristics in each language. They were also asked to watch two different 30-second video-clips and describe one of them in Russian and the other in English. The videos were presented randomly to the participants. Voice samples were analyzed acoustically by means of Praat software. The acoustic parameters extracted were: Mean, minimum and maximum F0, F0 variability (Hz and semitones), duration, and speech rate (words/minute). There were no significant differences in how the individuals perceive their communication characteristics in both languages (all $p > 0.050$). No statistical differences were found in any of the pitch-related measures (mean F0 $p = 0.114$, minimum F0 $p = 0.462$, maximum F0 $p = 0.324$, F0 variability-Hz $p = 0.325$, semitones $p = 0.368$). Individuals had faster speech rate in English than in Russian (143 words/min vs. 95.9 words/min, $p = 0.008$). Duration was similar in both languages (English = 21.0 sec; Russian = 22.7 sec; $p = 0.397$). Correlations were found between age and gender with some of the self-perception questions. These results show that Russian-English bilingual individuals have similar pitch-related characteristics and diverse temporal characteristics of speech when speaking both languages.

SP04: Yang, S.

Production of Korean idiomatic utterances following left- and right-hemisphere damage

Abstract: Introduction: This study investigates the effects of left- or right-hemisphere damage on the production of idiomatic or literal expressions utilizing perceptual and acoustic analyses. Method: Twenty one native speakers of Korean with left- (LHD) or right-hemisphere damage (RHD) and healthy controls (HC) produced 6 ditropically ambiguous (idiomatic or literal) sentences in two different speech tasks (elicitation and repetition). Healthy listeners' identification of the sentence types was assessed. The data collected in the elicitation and repetition tasks were further analyzed using listeners' perceptual ratings and acoustic measures. Results: Native Korean listeners were successful in discriminating the intended idiomatic and literal meanings of ditropic sentences produced by HC. However, they showed decreased performance in discriminating utterances produced by brain-damaged individuals during the elicitation tasks, especially those produced by RHD. During the elicitation tasks, participants with LHD significantly differed significantly from HC in durational measures. Significant differences between participants with RHD and HC were seen in measures of fundamental frequency. However, for the repetition tasks, acoustic and perceptual analyses showed that the LHD and RHD groups produced utterances comparable to HC performance. Conclusion: The findings support that (1) healthy listeners successfully identified idiomatic and literal versions of ambiguous sentences produced by HC but not by RHD speakers; (2) LHD negatively affected the production of durational cues and RHD negatively affected the production of fundamental frequency cues; (3) Productions in brain-damaged participants approximated HC's measures in the repetition tasks.