Poster Presentations

Wellness Care in a Chiropractic Practice-Based Research Program

Joel Alcantara, The International Chiropractic Pediatric Association and Life Chiropractic College West, **Linda Mullin**, Life University, **Jeanne Ohm**, and **Kurt Kunz**, International Chiropractic Pediatric Association

Introduction: Many healing systems from around the world share with chiropractic the concepts of holism and vitalism within the context of wellness care. Such shared framework may promote the uptake of chiropractic in diverse populations. However, the clinical covariates associated with chiropractic "wellness care" remain largely unexplored. We surveyed chiropractors and patients to explore this aspect of chiropractic care. **Methods:** This study was approved by the Institutional Review Board of Life University (Atlanta, GA). Using mixed methodology, we surveyed chiropractors and parents on their clinical experience with wellness care. **Results:** A convenience sample of 64 chiropractors, 346 parents, and 471 children were study participants. A high degree of patient-perceived effectiveness was found along with perceived benefits of wellness care. **Discussion:** Our chiropractor responders support clinical preventive services by counseling patients on diet and exercise and risk reduction. However, deficits in preventive services were also identified based on patient responses. **Conclusion:** We encourage further research on the delivery of wellness chiropractic care. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Vision-Induced Chronic Low Back Pain: A Case Report

Charles Beck, Private Practice, and **Charles Blum**, Sacro Occipital Technique Organization – USA

Introduction: A 34-year-old female patient presented with a history of low back pain (dull, achy, nonradiating) that has been present for nearly 2 years. **Methods:** The patient reported complete relief of her chronic low back pain with her eyes closed or in a darkened room, whereas the pain would return when opening her eyes and particularly in a lightened room, with or without eyeglasses. **Treatment:** Osteopathic manipulative therapy (OMT) to the full body and cranium was applied with the patient's eyes opened, closed, and eyeglasses on and off. Modifications were made to the optometric prescription and eyeglasses to optimize body and cranial function as well as to reduce her low back pain. **Results:** The patient noted considerable relief in her low back pain with the new eyeglass prescription, and this relief was sustained regardless of eyes open or closed, and particularly with her eyeglasses on. **Conclusion:** This case study illustrates that a subset of patients may present with a clinical condition that either affects vision or the vision affects the condition called a visual somatic strain. This demonstrates how collaborative efforts might be made to develop cotreatment opportunities between osteopaths, chiropractors, ophthalmologists, and other allied professionals. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

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Comparison of Ability of the Bournemouth Questionnaire and Measure Yourself Medical Outcome Profile to Detect Clinically Meaningful Change in Patients With Low Back Pain Receiving Chiropractic Treatment

Alison Bell, **Gabrielle Swait**, **Adrian Hunnisett**, and **Christina Cunliffe**, McTimoney College of Chiropractic

Introduction: This study compares the ability of the Bournemouth Questionnaire (BQ) and Measure Yourself Medical Outcome Profile (MYMOP) to detect clinically meaningful change in low back pain patients receiving chiropractic intervention. **Method:** Following ethical approval, 50 participants were recruited to a prospective cohort study with 23 completing the study (46% response rate). Participants completed MYMOP and BQ before treatment, after four treatments, and after six treatments. A Global Impression of Change was also completed at the sixth treatment. Results were recorded and analyzed to determine any differences between BQ and MYMOP. **Results:** Standard response mean results for MYMOP were statistically higher than for BQ at the fourth and sixth treatments. ROC analysis for MYMOP and BQ showed that they were unable to detect clinically significant change at the fourth and sixth treatments. Significant correlation was found between the two questionnaires during treatment ($p < .05$). **Conclusion:** No previous research has investigated the use of MYMOP in low back pain patients. The results of this study showed that neither MYMOP nor BQ were able to detect any significant clinically meaningful change. However, positive correlation between MYMOP and BQ would suggest strong potential for the use of MYMOP. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Chiropractic Manipulative Reflex Technique and Acupuncture in Treatment of Dysmenorrhea (Oligomenorrhea): A Case Report

Christine Benner and **Charles Blum**, Sacro Occipital Technique Organization – USA

Introduction: A 31-year-old female patient presented initially to this office for low back and foot pain 5 years prior and wanted preventative wellness care. Approximately 5 years into care, February 2008, the patient discussed the possibility of utilizing acupuncture to help her cope with an irregular menstrual cycle, having only light periods (1–2 days) two to three times a year for over 10 years or more. **Methods/Intervention:** The patient was assessed and treated using Sacro Occipital Technique (SOT) chiropractic, chiropractic manipulative reflex technique (CMRT), and acupuncture protocols. **Results:** Following 1 year of integrating SOT, CMRT for liver (T8) and adrenals (T9), and acupuncture, her condition has been consistently improving and her cycle has been regulating with periods of monthly cycling and with only 3 months of amenorrhea one time during a time of high stress and anxiety. **Conclusion:** The chronicity of the patient's symptoms, over 10 years, and the temporal relationship between treatment and response to care is of interest. It is also of interest that the patient was receiving chiropractic care on an ongoing preventative basis but not until the treatment changed to include CMRT and acupuncture was there a change in her symptomatology. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Chiropractic Care of an Infant "Bottom Shuffler": A Case Report and Review of the Literature

Maria Bernard, Private Practice, and **Joel Alcantara**, Life Chiropractic College West and The International Chiropractic Pediatric Association

Objective: To describe the chiropractic care of an infant with the inability to crawl. **Clinical Features:** The mother of an 11-month-old female infant sought care for her daughter with concerns of the inability to crawl. At 8 months of age, instead of crawling on all fours as her siblings did, the child became a "bottom shuffler." No known dysfunctions or past history of trauma could be attributed where she preferred to sit on her buttocks and push herself with her hands and arms to mobilize. Spinal segmental dysfunctions were noted in the upper cervical spine and sacrum. **Intervention and Outcome:** The Activator Instrument was applied to correct sites of spinal segmental dysfunctions. On the second visit, the patient's mother reported that within hours after receiving chiropractic care, the patient's "complaint" of abnormal crawling had resolved with the child crawling on all fours. **Conclusion:** This case study allows for the possibility that chiropractic care may affect abnormal biomechanical functioning that affects a child's developmental milestones. We support further research in the care of similar patients. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Cervical Traction, Temporomandibular Joint, Chiropractic, and Dental Cotreatment: A Case Report

Charles Blum and **Richard Gerardo**, Sacro Occipital Technique Organization – USA

Introduction: The patient presented as a 66-year-old female with significant pain and stiffness in her neck and crepitus when using her jaw. Her dentist referred her to this office for cranial and Sacro Occipital Technique (SOT) treatment for conditions interrelated to her temporomandibular joint (TMJ) disorders. She could not tolerate cervical manipulation. **Methods/Intervention:** The patient's cervical range of motion was found to be reduced by 30% of normal and radiographic analysis revealed moderate degenerative joint disease in the lower cervical spine from C4 to C6. Treatment consisted of cervical traction utilizing the Pronex Cervical (nonmandibular) Traction, SOT procedures, and particularly cervical stair-step corrections and cranial therapeutic techniques for the TMJ. **Results:** Following treatment, the patient had a marked increase in cervical range of motion (normal levels) and a 90% decrease in pain and tension on palpation. The ability to treat the cervical spine also appeared to aid the treatment for TMJ-related tension and pain. **Conclusion:** The purpose of this case was to explore the efficacy of using cervical traction without pressure to the jaw to support chiropractic treatment as well as to facilitate a patient's ability to receive care for neck and jaw pain and stiffness. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Supine and Prone Sacro Occipital Technique Pelvic Block Placement: A Comparative Analysis of Position by Magnetic Resonance Imaging

Charles Blum, Sacro Occipital Technique Organization – USA, **Chad Warshal**, New York College of Chiropractic, **Sana Khan**, Vital Imaging, and **Tammy Cassa**

Introduction: Pelvic blocks or wedges have been utilized in the Sacro Occipital Technique (SOT) method of chiropractic since the 1960s with a rational for both supine and prone block placements. **Methods:** Four same-subject magnetic resonance images were taken supine and prone, two with pelvic blocks and two without pelvic blocks (control). **Results:** Comparing control and intervention sequences, there does not appear to be any measurable anatomical changes in the sacroiliac joints between the control studies and the blocked studies. **Discussion:** Research has noted that, with pelvic block use, functional changes such as reduced pain, improved range of motion, and muscle strength have been found, yet this may be due to neuromuscular and not mechanical effects. This study had limitations and future studies should utilize greater field strength magnets for better resolution, visualize the whole bony pelvis instead of isolating the sacroiliac joint, and incorporate more extensive three-dimensional analytic technology. **Conclusion:** The positive clinical functional changes associated with SOT pelvic block placement may be due to neuromuscular factors and not solely mechanical. Future research utilizing the information learned from this study may yield a clearer picture of what is taking place with pelvic block placement(s). (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Upper Cervical Chiropractic Care for a 7-Year-Old Child With Convergent Strabismus

Tod Cahill, Sweat Institute, and **Casey Crisp**, Palmer College of Chiropractic

Objective: The purpose of this case report is to describe the chiropractic management using atlas orthogonal upper cervical techniques of a 7-year-old female diagnosed with convergent strabismus. **Clinical Features:** A 7-year-old female had a history of convergent strabismus, which was diagnosed at the age of 2 years. The child's condition was diagnosed as idiopathic and became apparent in infancy. **Intervention and Outcome:** After case history and physical exam, the patient received an adjustment of her atlas using the atlas percussion instrument. There was immediate improvement of both vision and the condition of convergent strabismus. **Conclusion:** The case study demonstrated improvement in a young child with convergent strabismus after receiving upper cervical chiropractic manipulation. The case suggests the need for controlled studies to aid our understanding of this finding. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Paroxysmal Supraventricular Tachycardia and Chiropractic Care: A Case Report

Scott Carpenter, **Sarah Greene**, and **James Countryman**, Palmer College of Chiropractic

Objective: To describe the conservative management of a patient with paroxysmal supraventricular tachycardia (PSVT). **Clinical Features:** A 41-year-old male had paroxysmal supraventricular tachycardia, including 2-year history of palpitations three to six times daily for unknown reasons. He also had light-headedness, shortness of breath, and chest pain, with symptoms usually lasting anywhere from a few seconds to a couple minutes per episode. He was evaluated using standard palpation and Activator methods. **Intervention and Outcome:** Examination found areas of joint restriction and spinal misalignment. Areas of the ribs and sternum showing joint restriction and misalignment were adjusted for 14 weeks, using instrument-assisted and non-instrument-assisted high-velocity, low-amplitude manipulations. Over the 14-week period, episodes were reduced from three to six every day to one episode every 2 to 3 weeks. **Conclusion:** Chiropractic manipulation of the full spine, ribs, and sternum may be beneficial in treating some patients with PSVT. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Perceptions and Types of Nonmusculoskeletal Benefits Experienced by Chiropractic Faculty Members at a Complementary and Alternative Medicine University

Mabel Chang, **Brett Sloan**, and **Jerrilyn Cambron**, National University of Health Sciences

Introduction: The purpose of this survey was to document the types of nonmusculoskeletal effects experienced after chiropractic treatment, along with the perceptions about what chiropractic can treat and the individual's rationale as to why they linked the benefit to chiropractic care. **Methods:** A questionnaire with essay and multiple-choice questions was created in Survey Monkey. Purposive sampling of chiropractors who are faculty members from a complementary and alternative medicine university was performed. Multiple-choice answers were collapsed and essay answers were analyzed using Constant Comparative Method. **Results:** A major theme of what aspects of chiropractic care lead to the nonmusculoskeletal benefit was the multiple intervention approach. The adjustment and lifestyle modification were particularly important categories. **Discussion:** Across the qualitative and quantitative data, it was shown that the ""adjustment"" is a consistent element in treatment and the multiple intervention approach was a prevalent theme. There are several limitations to this study. **Conclusion:** The important themes identified include the chiropractic adjustment and the multiple interventions approach, especially the use of nutrition. There was no relationship between knowledge of nonmusculoskeletal benefit and the experience of it. It is recommended that further research in this area be conducted. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Association of Chiropractic Colleges Educational Conference 1994–2011: Categorizing the Abstracts and Their Trends

Robert Cooperstein and **Morgan Young**, Palmer College of Chiropractic West

Introduction: The Association of Chiropractic Colleges (ACC) held its first educational conference in 1994, and the first Research Agenda Conference (RAC) was in 1999. In 1999 the conferences merged. We hypothesized that published abstracts may be changing their composition and that such changes could have implications. **Methods:** All proceedings of the ACC educational conferences from 1994 to 2011 were inspected and allocated to one of the following categories: anatomy, basic sciences, clinical science, educational research, public health, surveys, and technology assessment. **Results:** We categorized 1323 abstracts. Three categories manifested a trend: clinical sciences (increasing 13% to 32%), educational research (decreasing 54% to 18%), and public health (increasing 6% to 20%). The other four categories, including anatomy (2.9%), basic sciences (12.5%), surveys (6.9%), and technology assessment (6.2%) remained substantially unchanged. **Discussion and Conclusion:** Merging RAC with ACC resulted in the published abstracts becoming more weighted in clinical sciences and less in educational research. With technology assessment studies relatively static in proportion while outcome studies increase their share, we are somewhat concerned that underdevelopment of good assessment methods will ultimately hinder properly selecting participants likely to benefit from chiropractic care in outcome studies. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Chiropractic Management of Atypical Trigeminal Neuralgia

Casey Crisp, Palmer College of Chiropractic Davenport, **Kevin Turner**, Private Practice, and **Eromata Ebwe**, Student

Objective: Describe the upper cervical chiropractic management of a patient with atypical trigeminal neuralgia. **Clinical Features:** A 47-year-old female with a 6-month history of constant, burning left-side facial pain. **Intervention and Outcome:** The patient received an upper cervical specific chiropractic treatment, the Atlas Orthogonal (AO) technique, for 2 weeks. She also received active and passive modalities (soft tissue manipulation and relaxation) for spasm and hypertonicity of the right trapezius, sternocleidomastoid, and scalenes. After the first adjustment, the patient stated that her facial pain was no longer constant. The next day facial pain was intermittent with approximately 10 episodes of stabbing pain. After the second adjustment, the pain was immediately gone. At 1-year follow-up, the pain is still gone, with no exacerbations. **Conclusion:** This case study suggests a possible correlation with chiropractic care and the decrease of symptoms exhibited in patients with atypical trigeminal neuralgia. Further clinical trials are needed for more understanding of these findings. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Management of Noncardiac Chest Pain With Chiropractic Care: A Case Study and Review

Stephan Cooper and **Mark Pfefer**, Cleveland Chiropractic College

Objective: The purpose of this paper is to discuss the outcome of a patient with noncardiac chest pain treated with chiropractic spinal manipulation combined with instrument-assisted soft tissue mobilization. **Introduction:** Chest pain is the fourth most common presentation in emergency rooms in the United States. The direct and indirect costs of chest pain are high in terms of disability, medication, repeated hospital admissions and physician visits, and costly diagnostic procedures. **Clinical Features:** The case of a 45 year-old male presenting to a chiropractic clinic with complaints of chest pain is discussed. Although the source of this chest pain was likely noncardiac, cardiac risk factors were present and were addressed as well. **Intervention and Outcome:** The patient was treated with manual thoracic spinal manipulation and instrument-assisted soft tissue mobilization with complete resolution of chest pain at 3 weeks and no chest pain at 1-month and 3-month follow-up visits. Conservative cardiac prevention approaches were encouraged with good outcome. **Conclusion:** This case points out the promising role that the combination of chiropractic manipulation and instrument-assisted soft tissue mobilization may have in the management of noncardiac chest pain arising from musculoskeletal dysfunction. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Prevalence of Musculoskeletal Complaints by Horseback Riders and Reported Improvement Following Chiropractic Treatment

Priscila Da Rosa, **Fabio Dal Bello**, Universidad Central de Chile, and **Charles Blum**, Sacro Occipital Technique Organization – USA

Introduction: To evaluate the prevalence and musculoskeletal complaints by horseback riders and the effect of chiropractic treatment in regards to these complaints, a quasi-experimental prevalence study was carried out, with a control and an experimental group. **Methods:** Twenty individuals from both genders, 9 to 35 years old, presenting with symptoms of pain related to the practice of horseback riding were studied. This study group consisted of regular horseback riders participating in jumping activities for at least 3 months. A visual analog scale was used to monitor any possible effect of chiropractic treatment to the control group. **Results:** Of the various pain complaints, pain localizing to the low back was the most frequent. In the treatment group, pain levels comparing the last appointment to the initial evaluation were decreased. The average pain level for the control group initially was 3.24 as well as at the final evaluation. **Discussion:** It may be suggested that horseback riders can benefit from certain therapeutic treatments and preventative behaviors for musculoskeletal disorders associated with chiropractic care. **Conclusion:** Chiropractic treatment helped reduce musculoskeletal pain for horseback riders in this study, whereas the control group's symptoms slightly worsened. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Survey of Chiropractic Students and Their Attitudes on the Use of X-Ray

Lydia Dever, Life University

Introduction: Chiropractors commonly use X-ray as a diagnostic tool in the care of patients. This study seeks to illicit data from chiropractic students as to their attitudes and value on the use of X-ray in patient care. **Method:** A 16-question anonymous paper survey was administered to chiropractic students in four quarters. The surveys were collected and sent to the Office of Institutional Effectiveness, Planning, and Research for data analysis. **Results:** Five hundred seventy-two responses were received with a superficial return rate of 53%. Respondents at all levels felt the information gained from X-ray was valuable in patient care. Eighty-six percent felt that without an X-ray, there could be adverse consequences to patient care. **Conclusion:** Students are faced with many tools to help evaluate and administer care of patients. The ability to use an X-ray appears to be an important option to the student. This may be due to a variety of factors, including evaluation of trauma anomalies suspected, as well as suspicion pathologies. Further studies are warranted. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Treatment of Traumatic Brain Injury by Vestibular Stimulation Using a Multiaxis Rotational Chair for Whole-Body Rotation

James Duffy, **Trish Triemert**, and **Benjamine Behrendt**, Life University

Objective: The relationship between multiplanar vestibular stimulation and improved neural integration was investigated in an individual with traumatic brain injury (TBI). This was performed by rotating the patient in a multiaxis rotational chair, which provided whole-body rotations in a specific pattern. **Clinical Features:** The participant was an 18-year-old male who presented with difficulty walking, difficulty maintaining balance, dysarthric speech, and other neurological deficits secondary to a TBI acquired at age 16. **Intervention and Outcome:** A specific protocol was used involving three times daily rotation in both pitch and yaw in a precise combination and speed in order to specifically stimulate the vestibular system for improvements in balance and brain function. **Conclusion:** The human brain requires cooperation and matching of proprioceptive and vestibular systems. With appropriate stimulation, improvements in balance as well as cognitive, emotional, and motor functions were noted. Further study of this approach would be required to determine if there is a cause–effect relationship with this type of vestibular rehabilitation and functional improvements with TBI patients. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Sickle Cell Disease-Induced Osteoporosis in a Chiropractic Student: Case Report and Ethical and Legal Issues Surrounding Matriculation of Current and Potential Chiropractic Students With Sickle Cell Disease

Jonathon Egan, New York Chiropractic College

Introduction: Sickle cell disease (SCD) is a genetic disorder largely affecting individuals of African descent that may produce severe osteopenia in youth, risk student safety in chiropractic academic programs, and complicate chiropractic therapy. There is a history of discrimination surrounding SCD. **Methods:** A case report of SCD-induced systemic osteoporosis in a chiropractic student is presented. The pathophysiology, epidemiology, and management of SCD are highlighted. Legal and ethical concepts surrounding chiropractic college technical standards are reviewed. **Results:** The case patient discovered her SCD-induced systemic osteopenia after matriculating and elected to withdraw. Chiropractors can play a role in SCD evaluation and management. Chiropractic colleges can legally require students to have attributes that do not directly threaten safety through technical standards. Inquiring about applicant physical health relative to technical standards is delicate, particularly with historically sensitive health concerns. **Discussion:** SCD affects some individuals of African (and other) descent and is a sensitive consideration affecting chiropractic college minority applicants. SCD status (and screening) has been a source of racial discrimination and has legal protection. **Conclusion:** There is tension between institutional technical standards of safe performance, individual rights, societal interests in nondiscrimination, and professional interests in member performance. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Successful Treatment of Alzheimer's Disease Symptoms With the Use of a Multiaxis Balance Training System: A Case Report

Susan Esposito and **Linda Mullin**, Life University

Introduction: Alzheimer's disease (AD) is the most common form of dementia. Symptoms of memory loss, personality changes, and physical regression are a result of loss of cortical neuronal function and brain atrophy. Improving the neural capacity of the frontal lobe and cortical association areas offers a reduction of associated symptoms and slows the progression of AD. This case study highlights the use of a multiaxis balance training system (gyroscope) to improve the symptoms of AD. **Clinical Features:** A 69-year-old female presented for assessment and treatment of symptoms associated with AD. Her symptoms included loss of balance, progressive memory loss, tinnitus, affect changes, and maxillary tremors. Neurologic exam revealed a decrease in function of the left cortical hemisphere and right cerebellum. **Treatment:** Ten visits using a gyroscope were administered. Progress was assessed by neurologic testing, including Computerized Assessment of Postural System for balance, sway, and center of pressure. **Outcome:** Symptoms of memory, balance, maxillary tremors, and tinnitus were markedly improved, while depression and anxiety were resolved. **Conclusion:** This case demonstrated the novel use of multiaxis rotation for vestibular stimulation. This improved the cortical activity and balance in this patient, which reduced many symptoms of AD. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Opinions of Chiropractors and the Chiropractic Profession From the Perspective of the Public at Large: An Exploratory Survey

Joseph Forese and **Tim Gooding**, Life University

Objective: The purpose of this study was to explore the attitudes, perceptions, and opinions toward chiropractors and the chiropractic profession from the standpoint of the general public. **Methods:** A comprehensive survey was designed to address the above mentioned factors. Generalized statements about the chiropractic profession were posed to respondents who were asked to indicate their opinion to those statements on a rating scale of agree, neutral, or disagree. The anonymous survey was distributed to random adult respondents who volitionally agreed to participate in the study. **Results:** There appear to be a number of misconceptions among members of the public in our survey as to what constitutes chiropractic scope of practice. Also, of particular concern was the seemingly negative preconception relating to a chiropractor's level of education and training. **Conclusion:** The generally negative preconceived notions toward chiropractic education and training along with apparent misunderstandings of chiropractic scope of practice could be viewed as major potential barriers to consumer utilization of chiropractic services. Further studies are needed to investigate this more fully. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Resolution of Cervical Radiculopathy Due to Cervical Disc Herniation Following Upper Cervical High-Velocity, Low-Amplitude Spinal Manipulation: A Case Study

Andy Gibson, Gibson Upper Cervical Chiropractic, LLC, **James Countryman**, and **Todd Hubbard**, Palmer College of Chiropractic

Objective: This case report reports on the relative effectiveness of cervical spinal manipulation therapy (CSMT) and the resultant biomechanical changes to the cervical spine and resolution of cervical radiculopathy. **Clinical Features:** At age 38, patient reports sitting in her home watching television and noticed a sharp pain in the base of her neck. Symptoms persisted over a 5-month period, prior to care. **Intervention:** The patient received Blair upper cervical chiropractic care over a 7-month period of time. **Outcome:** Over the course of 7 months of care, postadjustive magnetic resonance imaging studies show significant reduction of C5/C6 disc protrusion as well as positive biomechanical changes to the cervical spine. The patient reported a complete resolution of her symptoms. **Conclusion:** This is a case report of a 38-year-old female patient with a history of symptoms after a previous fall. The symptoms resolved after receiving specific, vector-based CSMT to the upper cervical spine, suggesting a possible link between the patient's neck injury, the upper cervical subluxation, and the resultant changes in cervical disc retraction. Future inquiries into specific CSMT to the upper cervical spine as a treatment for posterior disc protrusions should be pursued. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

An Evaluation of 555 Workers' Compensation Cases of Low Back Injury Involving Chiropractic Care From Colorado

David Gilkey and **Alicia Domsky**, Colorado State University

Introduction: Low back injury and resulting pain are a significant burden to US commerce and cause much suffering and disability among the American workforce. **Methods:** We evaluated 555 closed workers' compensation claims from Colorado to characterize the patterns of treatment and cost based on the number of ICD-9 codes. The team evaluated cases with one, two, or three ICD-9 codes representing disorders: sprains and strains, intervertebral disc disorders, and unspecified disorders of the low back. **Results:** Study findings demonstrated that costs for cases with three ICD-9 codes was 3.9 higher compared to cases with a single ICD-9 code and received 1.9 times more service. **Discussion:** We believe that the use of multiple ICD-9 codes for diagnosis of low back injury suggests that there may be increasing complexity and severity of workers' injuries. We also believe that multiple modalities and/or providers in addition to chiropractic treatment will increase the total costs for care and management. **Conclusions:** It appears that increasing the number of ICD-9 codes assigned to a case may be accompanied by an increase in the number of services, length of time, and total cost of treatment for low back pain. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Multiple Myeloma Presenting in a Patient With Relevant Case History and Radiographic Illustration of Destructive Spinal Lesions: A Case Report

Joseph Haezebrouck and **Krystal Tomlin**, Life University

Introduction: This case report illustrates the important correlation of a patient's case history and rational for immediate chiropractic imaging. Significant life-threatening clinical findings detected early in this case rendered urgent and immediate medical referral. This case reflects diverse and complex discussions, reinforcing our roles as primary health care providers. **Clinical Features:** A 57-year-old female patient re-entered care at a chiropractic clinic upon relocating from across the country; X-rays accompanied the patient. Neck pain, arm numbness, and lost neck motion occurred after washing her hair in a salon's shampoo bowl. Another chiropractor delivered care one time and the patient voiced "no relief." **Intervention and Outcome:** Case history indicated cervical spine X-rays. Film interpretation illustrated advanced bone loss and collapse. This patient's unstable cervical spine required the use of a semi-rigid collar. Her primary care physician was called immediately for mandatory advanced imaging and labs and collaborative care was begun. **Conclusion:** Results obtained verified fractures and secondary lesions of multiple myeloma. Immediate surgical C3 corpectomy, C2 through C6 structural implant, and interfusion became life saving. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Analysis of the Patient's Own Data: A Case Report Using Basic Statistics

John Hart, Sherman College of Chiropractic

Introduction: Statistical analyses in private practice are often derived from studies about other patients. Building on a previously published case report, the present report uses basic statistics from an individual patient's own set of numerical data. Such an approach allows the patient to be compared to himself, at least from a statistical standpoint. **Methods:** Using mastoid fossa temperature differentials (MFTD), outlier detection was performed using quartile analysis while variability was determined using the coefficient of variability (CV) test. **Results:** For outlier analysis, all readings before the adjustment, thought to represent an abnormal state, fell within the quartile "fence" limits, while one postadjustment MFTD fell outside the fences (indicating a finding that was different from the abnormal baseline). For variability analysis, CV values fluctuated with the largest variation, evidenced by the largest CV values, also being observed following the adjustment. **Discussion:** Statistical significance does not necessarily equal clinical significance. Hence, further research, with an outcomes-based design, is needed. **Conclusion:** Statistical analysis of the individual patient's own data could make chiropractic analysis of numeric data more objective. Outcomes research is required to determine whether the statistical methods in this report have clinical significance. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Gray Scale and Doppler Ultrasound in Carpal Tunnel Syndrome: A Case Report

Daniel Haun, **Eve Bonic**, **Thomas Clark**, and **Norman Kettner**, Logan College of Chiropractic

Introduction: Electrodiagnostic testing (EDX) is often utilized to objectify the diagnosis of carpal tunnel syndrome (CTS). Gray scale ultrasonography (US) of the median nerve has demonstrated utility in the objective diagnosis of CTS, while Doppler US has been mentioned sparingly. We report a case of bilateral CTS with both gray scale and power Doppler findings in both a surgically treated and nonsurgically treated wrist. **Case Report:** A 57-year-old male presented with bilateral CTS that was confirmed with EDX. One wrist had previously undergone carpal tunnel release while the other had been managed conservatively. US was used in the diagnosis and follow-up of treatment response in both wrists. **Results:** US examination demonstrated enlargement of the median nerves bilaterally with power Doppler evidence of intraneural vascularity, consistent with CTS. Incidentally, a bifid median nerve was identified on the right. The right transverse carpal ligament was thickened, consistent with a previous release procedure. **Discussion:** US was beneficial in confirming the CTS diagnosis by revealing enlarged nerves and intraneural flow in the both wrists. These findings in the postoperative wrist suggested a poor treatment outcome. US was useful for the evaluation of this patient with both surgically treated and nonsurgically treated CTS. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Factors That Influence Chiropractic Student Confidence During the Clinical Internship

Mark Hecimovich and **Simone Volet**, Murdoch University

Introduction: The internship is integral in chiropractic programs and appears to be a significant factor in the building of confidence. Therefore, the aim of this study was to determine which factors of the internship influenced student confidence in clinical and patient communication skills. **Methods:** A mixed approach was used to examine the changes and factors that influenced student confidence in clinical skills and patient communication over the course of their internship. One hundred six questionnaires were analyzed and 12 students were invited to participate in interviews during their internship. **Results:** Results revealed that confidence increased significantly regardless of experience, age, gender, and qualification. Factors influencing confidence were clinician encounters, audible noise, and human agency, along with issues about the profession. **Discussion:** Confidence increases but factors that the clinician encounters may affect students' perceptions of the profession, thereby enhancing human agency, which may affect their success as a practitioner. Student's focusing on the audible, as opposed to patient outcomes, mirrored current research on its powerful placebo effect—an issue that educators need to consider. **Conclusion:** The rich data elicited can assist clinical educators in developing ways to measure confidence and recognize key factors that may be affecting it. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Facebook Use and Professionalism Among Chiropractic Students

Gloria Hinck, **Roni Evans**, and **Emily Tweed**, Northwestern Health Sciences University

Introduction: Could the Facebook use of chiropractic students potentially have a negative impact on their professional careers? This research investigated the Facebook profiles of chiropractic students to determine the type of information that was publicly available and to assess whether or not the content posted was unprofessional in nature. **Methods:** The publicly available Facebook profiles of 308 chiropractic students were evaluated. Descriptive statistics were used to analyze the type of content viewable on each site and the frequency of unprofessional content appearing on the sites. The study design was approved by the university's Institutional Review Board process. **Results:** Three hundred eight out of 492 (62%) chiropractic students were confirmed as having publicly available Facebook sites. Privacy settings frequently allowed viewing of personal information, such as profile picture (90%), friends list (75%), photos (36%), and posts (26%). Forty-two percent of sites contained content that could be perceived as unprofessional, including alcohol (34%), overt sexuality (26%), and patient privacy violations (1%). **Conclusion:** Chiropractic students are allowing public access to personal and unprofessional content on their Facebook sites. Training related to appropriate use of social media should be included in the professionalism curriculum of chiropractic institutions. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Safety, Tolerability, and Effectiveness of an Ergonomic Intervention With Chiropractic Care for Knowledge Workers With Upper Extremity Musculoskeletal Disorders: A Prospective Case Series

Dale Johnson, **Charles Sherrod**, **Bruce Chester**, and **Robert Dubro**, Life Chiropractic College West

Objective: The purpose of this study was to investigate the safety, tolerability, and effectiveness of chiropractic care adjunctive to an ergonomic intervention for the reduction of pain, discomfort, and impaired productivity in knowledge workers presenting with neck and upper extremity musculoskeletal complaints. **Methods:** The study was a 16-week, Institutional Review Board-approved prospective case series of five knowledge workers working a minimum of 4 hours per day at the computer workstation. Ergonomic job task analysis and risk prioritization determined the personalized intervention for each subject, and diversified chiropractic care was provided at least weekly to assess and manage the musculoskeletal complaints. **Results:** Visual analog scale pain scores decreased for all subjects, except one with a surgically repaired wrist. Productivity increased for all subjects at midterm, but one subject returned to her baseline level as work pace exceeded that at enrollment. **Conclusions:** Safety and tolerability for the intervention was demonstrated and regular assessments and access to investigators were beneficial in the management of the musculoskeletal conditions and the adoption of safer behaviors. Effectiveness is indicated by the improvement in the reported pain of the neck and upper extremities and by the increased productivity. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

A Case Report of Bilateral Hand Pain, Swelling, and Numbness in an Assembly Worker

Everett Johnson, Parker University

A case of early detection of thoracic outlet syndrome is presented in a 46-year-old female factory worker. Presenting symptoms were similar to those used as a diagnostic criterion for thoracic outlet syndrome, but were not severe. The patient responded well to treatment by Active Release Techniques Soft Tissue Management System's long-tract nerve release protocols for the brachial plexus at the coracopectoral tunnel. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Accessory Coracobrachialis Muscle and Anastomosis of the Musculocutaneous and Median Nerves in a Cadaver: A Case Report

Everett Johnson and **Bahram Sardarabadi**, Parker University

Several reports of an anastomosis between the musculocutaneous and median nerves are reported in the literature. This study describes the axillary dissection of as 63-year-old female cadaver. As the lateral cord of the brachial plexus descended, a branch emerged from its medial margin at the level of the second part of the axillary artery that combined with the medial cord and the median nerve was formed as normally occurs. The lateral cord continued on toward the medial brachium and split into two branches. A lateral branch continued along the normal pathway of the musculocutaneous nerve. The medial branch continued down the medial brachium to meet with the median nerve and make an anastomosis with it. The variation of the lateral cord was wrapped by an anomalous slip of the superior portion of the coracobrachialis muscle, just distal to the split of the cord into its musculocutaneous and variant branches. The continuation of the lateral cord of the brachial plexus may be a contribution or medial branch of the musculocutaneous nerve forming an anastomosis with the median nerve. Clinically, patients may present with symptoms resembling high median nerve palsy. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Thyroid Hemiagenesis: A Sonographic Diagnosis

Martha Kaeser, **Daniel Haun**, **Muriel Perillat**, and **Norman Kettner**, Logan College of Chiropractic

Introduction: Thyroid abnormalities are commonly identified during sonographic carotid duplex screening examinations. The majority of the abnormalities are considered incidentalomas and demonstrate no clinical significance. A case of thyroid hemiagenesis, a rare diagnosis readily identified using sonography, is presented. Additionally, the thyroid pathologies associated with thyroid hemiagenesis are discussed. **Case Report:** A

25-year-old African American female presented to a chiropractic teaching clinic for a sonographic carotid screening examination with a GE LOGIQ e ultrasound scanner (GE Healthcare, Milwaukee, WI) using a 8- to 13-MHz linear array transducer. During the otherwise normal carotid examination, an asymmetrical appearance of the thyroid gland was noted. **Results:** A dedicated sonographic thyroid examination was performed. The examination demonstrated complete absence of the left lobe of the thyroid. The contralateral lobe of the thyroid was of normal volume. The clinical and laboratory examinations of the thyroid were normal. **Conclusion:** This is a case of thyroid hemiagenesis discovered incidentally during sonographic screening of the carotid arteries. Recognition of this abnormality may avoid further time-consuming and costly examinations. The thyroid pathologies associated with thyroid hemiagenesis are also discussed. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Anatomic Relationship Between the First Cervical Vertebra Transverse Process and Surrounding Structures: A Cadaveric Study

Pil-Woo Kim, Life University

Purpose: To describe adjacent structures in the C1 transverse process (TP) at the three major points: (1) distance to the styloid process, (2) structures between the styloid process and C1 TP, and (3) structures between C1 and the occiput. **Methods:** Dissection of the neck and face in two male and one female cadavers with midsagittal, midcoronal, and infratemporal fossa was performed. **Results:** Between the styloid process and C1 TP, measurement was 1/10 inches for two cadavers and 2/10 inches for one cadaver. Dissection shows the intimate relationship of the spinal accessory nerve, hypoglossal nerve, vagus nerve, glossophranygeal nerve, internal carotid artery, and superior cervical ganglion from lateral to medial. In the coronal cut in the foramen magnum, the dissection shows the vertebral artery with the denticular ligament attachment in the adventitia. **Discussion:** The structures in front of C1 TP have major autonomic nerve fibers and blood vessels for the brain, so it is possible that small misalignment of the C1 may present problems for the entire body. The vertebral artery has more protection outside of the dura matter from the dentate ligament, so it is stabilized until it penetrates into the dura matter.(This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Kienbock's Disease in a Varsity Football Player: A Case Report and Review of the Literature

Michelle Laframboise, **Robert Gringmuth**, and **Christopher Greenwood**, Canadian Memorial Chiropractic College

Introduction: The objective is to present the diagnostic and clinical features of Kienbock's disease and to review the management options. It is imperative to create awareness of the differential diagnosis of this condition in patients presenting with insidious, progressive dorsal wrist pain. **Clinical Features:** A 23-year-old male varsity football player presented with insidious progressive dorsal-sided wrist pain with reduced wrist flexion and extension. A diagnosis of Kienbock's disease was made via radiographs and magnetic resonance imaging. **Results:** A 3-mm negative ulnar variance was found and a joint-leveling procedure to shorten the radius was performed. Conservative therapy was provided pre- and postsurgical management. Relevant literature on Kienbock's disease is discussed. **Conclusion:** This case highlights the necessity for all primary health care practitioners responsible for diagnosing and treating wrist injuries to be aware of the potential of avascular necrosis. Kienbock's disease should be considered a differential diagnosis in patients with insidious, progressive wrist pain, especially in males between 20 and 40 years of age and those with a history of repetitive wrist trauma. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Clinical Effectiveness of Ultrasound as a Treatment for Ductal Blockage Affecting Optimal Breastfeeding Among 25 Postpartum Lactating Women: A Retrospective Case Series

Valerie Lavigne and **Brian Gleberzon**, Canadian Memorial Chiropractic College

Objective: Breastfeeding is vitally important to the well-being of both the infant and mother; however, some women experience difficulties with lactation resulting from ductal blockage. This study chronicles the experience of 25 postpartum women who were experiencing difficulties with breastfeeding and were successfully managed using therapeutic ultrasound. **Clinical Features:** Twenty-five women and their 27 children who experienced 34 separate

episodes of breastfeeding difficulties presented to a private chiropractic clinic that specializes in lactation consultation. **Intervention and Outcomes:** All women presented with a breast lump and all but two presented with pain. All were treated with therapeutic ultrasound. All reported improvements in breastfeeding. No adverse reactions were reported. **Conclusion:** Although no causal link can be drawn between the benefits realized and the treatment rendered, the information presented here suggests it would be worthwhile to conduct a prospective clinical trial in order to better ascertain the benefits, if any, of therapeutic ultrasound in cases of blocked ducts. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

A Rare Case of Dysplastic Spondyloptosis With Surgical Spinal Fusion: A Case Report

Melissa Loschiavo, **Bruce Fox**, and **Marni Capes**, Life University

Objective: To present an educational case report of a chiropractic patient with a high-grade dysplastic spondylolisthesis with spinal fusion. **Clinical Features and Outcome:** The patient is a 66-year-old female who presents with paraspinal lumbar pain and chronic bilateral lateral thigh numbness. Conventional radiographs of the lumbar spine revealed evidence of degeneration and an anomalous appearance of the lumbosacral junction with a grade five spondylolisthesis of the lowest lumbar. There was no evidence of a pars interarticularis defect at this level. The subsequent magnetic resonance imaging study revealed previous surgical spinal fusion at L5/S1 with significant central canal stenosis. Multiple chiropractic adjustments were delivered with no clinical improvement. **Conclusion:** Spondylolisthesis is a common radiographic finding in chiropractic practice. High-grade dyplastic spondylolisthesis is extremely uncommon, representing approximately 5% of all cases of anterolisthesis. Most patients who present with congenital spondyloptosis have had spinal fusion or are surgical candidates for fusion and decompression. It is important for the health care provider to be aware of the clinical and radiographic findings as well as the suitable management options associated with dysplastic spondyloptosis. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Is Understanding Diagnostic Utility Essential for Competent Patient Care? A Student Intern's Perspective

Albert Luce, **Dale Rossi**, Palmer College of Chiropractic, Florida Campus, **David Seaman**, National University of Health Sciences, Florida Campus, and **Steven Lint**, Palmer College of Chiropractic, Florida Campus

Background: Chiropractic students' preclinical years are filled with learning hundreds of signs and symptoms and tests which they are told will lead to a diagnosis. In the clinical phase of education, student interns must use this information to arrive at an accurate diagnosis. To evaluate student interns' understanding of diagnostic utility, they are asked: "How useful is this sign/symptom or test for indicating the presence of the target disorder?" We found that student interns could not completely answer that question. This lack of understanding formed the foundation for this educational innovation. **Discussion:** Two 10th-quarter student interns were trained in the following methods of diagnostic utility: specific symptom complexes, sensitivity, specificity, pretest probability, likelihood ratios, Fagan's nomogram, posttest probability, clinical predication rules, and confidence intervals. The interns' outpatient files were audited by clinicians for accuracy of clinical decision making based on the appropriate usage of diagnostic utility tools. After 2 months, the interns achieved 100% compliance with Medicare guidelines by employing these strategies. **Conclusion:** Knowing the diagnostic utility of signs and symptoms and tests used to arrive at a diagnosis is essential for competent patient care. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Chiropractic and Clinic Entrance: Creating a Ceremony and Assessing Its Significance for Students

Cynthia Lund, Life University

Introduction: For Doctor of Chiropractic students, the progression from classroom to clinic is more nuanced than just adopting new logistics and routines. New behaviors must be developed and supported, resulting in a relationship (student, faculty clinician, and patient) that ultimately results in the improved health of a human being. Should this university create a ceremony that acknowledges how important the step into clinic is for students and will that

ceremony have meaning and significance for them? **Methods:** Three stakeholder groups (the Student Council Clinic Committee, Clinic System, and Student Services) proposed, researched, developed, funded, and implemented an event that included a communication exercise related to patient care and a ceremonial reception including guests. **Results and Conclusion:** Response was positive and enthusiastic. Attendees were surveyed and 75% of them said the event held meaning for them personally. Areas of interest exist regarding whether the clinic experience was as described and promised within the ceremonial context. The university can continue with the ceremony, reviewing survey feedback from students, and consider appropriate revisions in both the event and the clinic experience. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Influence of Chiropractic Treatment Style on Patient Satisfaction

Rosalyn Mace, **Christina Cunliffe**, and **Adrian Hunnisett**, McTimoney College of Chiropractic

Introduction: Chiropractors usually enjoy high levels of patient satisfaction, but there are no studies comparing chiropractic styles with clinical outcome and patient satisfactions. **Method:** The study design was a cross-sectional survey. Following ethical approval, a self-administered questionnaire was mailed out to a number of chiropractic clinics in varying locations in the United Kingdom. The questionnaires were completed anonymously by the patients in these clinics. **Results:** A total of 186/250 valid questionnaires were received, giving a response rate of 75%. Overall satisfaction and quality of life scores are highest in clinics with treatments of more than 20 minutes; 75% of patients rated the clinics at 9–10. Clinics that have higher treatment frequency and regular wellness care programs have lower satisfaction scores than those with less frequency and wellness care. **Discussion:** The results showed some clear and important opinions regarding treatment length and frequency. Most emphasis centered on patient choice for treatment frequency. This element, along with less frequency, may optimize satisfaction. **Conclusion:** The results of this study have shown that patient satisfaction is influenced by different chiropractic styles, but further studies are required to clarify a wider range of variables. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Student Intern Perception of a Mentorship Model in a Chiropractic Teaching Clinic: A Pilot Study

Kenice Morehouse, **James LaRose**, and **Stephen Grand**, Palmer College of Chiropractic, Florida Campus

Introduction: Mentorship as a model of teaching in medical education has been utilized in nursing and allopathic medical training programs since the 1990s. Our chiropractic college recently adapted this model in our teaching clinics. Our goal is to determine how the current mentoring model used at the clinic in question influences student satisfaction and to identify areas of high satisfaction as well as areas needing improvement. This study was ruled exempt by our Human Protections Administrator. **Methods:** A survey methodology was used. Twelfth-quarter student interns completed a modified version of the Virginia Commonwealth University Faculty Mentoring Guide Assessment Form. **Results:** Student interns in the 12th quarter are basically satisfied with the mentorship model of clinical teaching. Some areas that may be improved upon were identified. **Discussion:** From our survey results it is evident that overall, in this cohort of students, satisfaction with the mentorship model of clinical teaching, as well as with their own mentors, was favorable. **Conclusion:** The mentorship model used at our chiropractic teaching clinic overall positively affects student satisfaction in this small pilot study. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Cervical Proprioception as Measured by Head Repositioning in Subjects With and Without Cervical Pain: A Pilot Study

Joseph Morley, **Matthew Funk**, and **Richard Saporito**, University of Bridgeport College of Chiropractic

Introduction: Cervical proprioception may vary by gender and current neck pain (NP). This pilot study compares head repositioning in blindfolded subjects with and without NP, those currently being treated for NP versus those not currently being treated, and between men and women. **Methods:** Institutional Review Board approval was obtained. Blindfolded subjects were fitted with a laser pointer device and seated in a neutral position facing a board. Neutral head position was recorded. Subjects were then asked to sequentially perform full end range of cervical flexion,

extension, right and left lateral flexion, and right and left rotation and to attempt to return to the initial starting point. Deviations from the starting point were recorded for each motion. **Results:** Subjects with NP showed less deviation than those without; male NP subjects showed less deviation than females with NP; females without NP showed less deviation than males without. Due to small sample sizes, significance could not be determined. **Conclusion:** Results from this pilot study showed trend differences between men and women and counterintuitive results for subjects with NP versus without. A larger scale study should be done in order to see if there are significant differences between groups and to assess relevance as a possible assessment tool. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Deep Vein Thrombosis Medically Diagnosed as "Leg Pain and Sciatica": Diagnostic Considerations for Care of the Pregnant Woman

Linda Mullin, Life University, and **Russell Herring**, Private Practice

Objective: The objective of this paper is to review and discuss a case of an atypical presentation of deep vein thrombosis (DVT) in pregnancy. **Clinical Features:** A 38-year-old multigravid female was referred by her OB/GYN to a chiropractic office for management of "leg pain and sciatica." **Intervention and Outcomes:** The patient presents with progressively worsening pain of 2 days' duration. She reports the pain begins in her right hip and travels down the back of the right leg into the plantar aspect of the foot. The leg pain was severe enough to limit ambulation. It is worse with coughing and moving and is relieved with rest. Physical exam revealed a positive Homan's sign. She was immediately transported to a vascular diagnostics center, which revealed the presence of a mixed age thrombosis that extended from the common femoral vein into the calf veins. This diagnosis resulted in direct hospitalization for treatment of the life-threatening condition. **Conclusions:** Many serious conditions may mimic common musculoskeletal problems. This case highlights an uncommon cause of radiating leg pain in pregnancy of which practitioners must be aware. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

A Case Study Utilizing Spinal Manipulation and Dynamic Neuromuscular Stabilization Care to Enhance Function of a Postcerebrovascular Accident Patient

Michael Oppelt, **Dave Juehring**, **Glenn Sorgenfrey**, **Phyllis J. Harvey**, **Greg Ploeger**, and **Susan M. Larkin-Thier**, Palmer College of Chiropractic

Introduction: This case report demonstrated physical function improvement of a 32-year-old male 4 years postcerebrovascular compromise with 32 weeks of spinal manipulation and Dynamic Neuromuscular Stabilization (DNS) rehabilitative care. **Methods:** Chiropractic care occurred once weekly for 32 weeks combined with DNS treatments over the later 16 weeks. Functional changes were tracked via patient report, outcome assessment, objective findings, and independent clinical examination. **Results:** Throughout care the patient progressed by starting to ambulate without assistance, showed less circumduction during gait, exhibited decrease in hand contracture, improved sleep patterns, and successfully accomplished a modified constraint therapy program. Questions pertaining to emotional content on the Bournemouth questionnaire scores dropped from 8 to 3 in 32 weeks. All health care professionals observed marked self-esteem improvement. Leisure activities were resumed with the ability to play golf and to lifting weights with reported steady improvement in load capacity. This total therapeutic approach reduced the patient's physical disabilities enhancing quality of life. **Conclusion:** This case demonstrated that spinal manipulative care combined with DNS treatment over 32 weeks helped improve many functional deficits and should be considered in subsequent care investigations of this condition. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Chiropractic Management of Patients With Failed Back Surgery Syndrome: A Retrospective Case Series

Mark Pfefer, **Stephan Cooper**, and **Rick Morris**, Cleveland Chiropractic College

Objective: The purpose of this paper is to discuss the outcomes in a group of failed back surgery syndrome patients after a course of multimodal care in a private chiropractic clinical setting. A brief review of literature on failed back surgery syndrome is included. **Clinical Features:** A retrospective chart review was performed within a private chiropractic clinic. Thirty-one patients during a 5-year period who met the classification for failed back surgery and initiated care were identified. **Intervention and Outcome:** Multimodal chiropractic care, including nonsurgical spinal decompression, mobilization, spinal manipulation, exercise, and lifestyle counseling, demonstrated improvement in a group of patients with back pain associated with failed back surgery syndrome. **Conclusion:** Future prospective clinical trials are needed to evaluate feasibility and effectiveness of this approach. This case series may provide guidance on effect size estimations in this population to plan future clinical trials. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Patient With a Stroke in Progress Reporting for Care in a Chiropractic College Outpatient Clinic: A Case Report

Mark Pfefer, **Stephan Cooper**, **Edward Smith**, and **Richard Strunk**, Cleveland Chiropractic College

Introduction: This report documents an ambulatory patient with a stroke in progress presenting to a chiropractic college outpatient clinic. **Methods:** The case of a 56-year-old male is described who presented for care with unusual neurological complaints and a well-known history of significant cardiovascular disease. Spinal manipulation was not performed on this established patient and he was quickly referred to a nearby emergency room where the diagnosis of ischemic stroke was confirmed. **Results:** The outcome of this case was positive and gratifying. Tissue plasminogen activator was administered at the hospital. Within 1 hour of being admitted to the hospital (and under 2 hours of presenting to the chiropractic college clinic), all neurological signs and symptoms quickly resolved. At a 3-month follow-up, the patient was doing well, having made a full recovery with no functional deficits. **Discussion:** It is strongly recommended that chiropractors be familiar with stroke signs and symptoms and valid clinical tests to assess patients suspected of having a stroke. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Snapshot of the French Chiropractic Population at the Emergence of Regulation in France

Jean-Philippe Pialasse, Association Francaise de Chiropratique

Introduction: Chiropractors started settling in France in 1920. However, the first law on chiropractic was published in 2002 and the decree to regulate the practice of chiropractic was issued only in January 2011. In the meantime, the French chiropractic population has grown; unfortunately this is not well documented and only limited data are available. The purpose of this study is to define the chiropractic demography in France before the full legalization. **Methodology:** Databases from the French Chiropractic Association and other economic databases were used to assess the French chiropractic population. **Results:** Chiropractors are distributed all over the territory except in seven departments. The French chiropractic population is young; 59% are males, but of the younger chiropractors, 58% are females. Most of the older chiropractors were trained in North America, whereas the younger ones are almost all from the French chiropractic college. **Discussion:** The French chiropractic population is still a young, growing population and it is still struggling against the legislation and trials for practicing medicine without a license. **Conclusion:** The French chiropractic population is better known. These data will be helpful to evaluate the evolution of the profession and to plan the needs of chiropractic education in France. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Manipulation Training and Lumbar Spine Stability: An Investigation Using a Modified Prone Instability Test

Steven Piper, **Stefano Bozzo**, **Jason Bonar**, and **Doug Meldrum**, Canadian Memorial Chiropractic College

Objective: To test whether spinal manipulation therapy (SMT) will decrease the force required to elicit tenderness during the prone instability test. **Methods:** A prospective cohort design was used. Fifty-two students received a modified prone instability test before a control period when no SMT was performed, followed by an experimental period when SMT was performed. Each test was completed by a clinician using a force measuring device. The study was approved by the institution's Research Ethics Board. **Results:** Significant differences exist within the prone instability test (relaxed versus contracted positions) for all three testing periods ($p < .006$). From September to January, there was a significant increase in force before tenderness was reported in the relaxed and contract phases within subjects ($p < .006$). From January to April, there was a significant increase in force before tenderness was reported in the relaxed phase ($p < .006$) but not the contracted phase ($p = .136$). **Conclusion:** SMT does not appear to cause a decrease in the necessary force to cause tenderness in the lumbar spine. This study was able to quantify the amount of force necessary to elicit tenderness in the lumbar spine region using a prone instability test in subjects who were asymptomatic. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Traumatic Hyoid Bone Fracture: A Case Report and Review of the Literature

Jason Porr, **Michelle Laframboise**, and **Mohsen Kazemi**, Canadian Memorial Chiropractic College

Objective: To present a case of traumatic hyoid bone fracture and a review of the literature. **Rationale:** Traumatic hyoid fractures are rare; however, with the increasing popularity of martial arts, the incidence of traumatic hyoid fracture may increase. **Clinical Features:** A 13-year-old taekwondo athlete collapsed after receiving a kick to the anterior neck. Following first aid emergency care, the athlete reported pain with speaking and swallowing and was suffering from dyspnea. Ecchymosis and tenderness were noted over the hyoid bone. **Intervention and Outcome:** Lateral radiographs revealed fracture of the hyoid. The patient was sent home with analgesics and instructed to rest. The athlete was cleared for the sport at 4 weeks postinjury. **Conclusion:** Ensuring airway integrity and screening for signs of laryngeal laceration are essential in the management of suspected hyoid bone fractures. Observation for 48 to 72 hours is highly recommended. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Sacro Occipital Technique Craniopathy Strain Correction in a 2-Year-Old Female With Nonsynostotic Deformational Plagiocephaly and Right Ventriculoperitoneal Shunt: A Case Report

Stephane Provencher, Sacro Occipital Research Society International, Inc.

Case History: A 2-year-old female with a right ventriculoperitoneal (VP) shunt placed at 3 days of age demonstrated motor and speech impairments persisting since birth. She was engaged in concurrent care with a neurologist and pediatrician since birth and a physical therapist for the prior year. **Methods and Intervention:** On examination, the patient demonstrated a cranial strain pattern consistent with nonsynostotic deformational plagiocephaly. Sacro Occipital Technique (SOT) and chiropractic craniopathic strain corrective technique were utilized along with a Logan Basic Technique sacrum adjustment. **Results:** After the initial SOT and chiropractic cranial treatment, the patient started to mumble words and on the trip home she was very talkative for 3 hours. The next day she continued to improve with more vocabulary and by walking on her own. By the 3rd day after treatment she was picking up toys and walking with less difficulty. **Conclusion:** It is theorized that this child's cranial strain determined by SOT chiropractic craniopathy may have contributed to meningeal stress and compromise of the vascular membranes, causing neural entrapment or cerebral spinal fluid stagnation. Further study is needed to determine if the findings in this one case report can offer options for other children with similar types of presentations. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Neglected Partial Achilles Tendon Tear: Monitoring With Ultrasound–Magnetic Resonance Imaging Fusion Technology and Serial Ultrasound Imaging

Kenneth Reckelhoff, **Danielle Spath**, **Eve Bonic**, **Daniel Haun**, and **Norman Kettner**, Logan College of Chiropractic

Introduction: The case of a neglected, partial-thickness Achilles tendon tear in a collegiate athlete is described. A magnetic resonance imaging (MRI) exam of the right ankle, acquired approximately 8 months after the incident, demonstrated partial tendon rupture. **Methods:** We monitored conservative treatment of the partial-thickness Achilles tendon tear utilizing three-dimensional volume navigation fusion, an emerging technology enabling live ultrasonographic scanning with simultaneous correlation on advanced imaging. Serial ultrasound (US) imaging was also employed to monitor the tendon response to treatment. Treatments consisted of myofascial manual therapy, class IV laser therapy, eccentric exercise loading of the triceps surae, and PowerPlate vibration therapy with simultaneous stretching. **Results:** The initial US demonstrated a 2.0-cm partial-thickness tear in the vertical dimension. US-MRI fusion was used to correlate the previous MRI with real-time US. Over a 2-month period, the tendon gap, as demonstrated on serial US, decreased 0.45 cm, consistent with interval healing. **Conclusions:** US-MRI fusion imaging may be a viable imaging tool to correlate the MRI findings with real-time US information. Serial US examination may be useful to monitor tendon healing during a course of conservative management of a partial-thickness Achilles tendon rupture. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Chiropractic Management in a Case of Multiple Sclerosis

Robert Rectenwald and **William Hamilton**, Life University

Introduction: Multiple sclerosis (MS) is an autoimmune disease that affects the spinal cord, brain stem, and brain, characterized by disseminated patches of demyelination. Typically, neurological deficits are multiple, with remissions and exacerbations, gradually producing disability. **Discussion:** Studies show that chiropractic adjustments are effective for MS symptom relief. One study showed reversal of plaque formations observed on magnetic resonance imaging (MRI). Data suggest that supplementation of the diet with omega-3 fatty acids results in reduced MS symptoms. **Methods:** A 42-year-old female patient presented with MS symptoms of severe muscle spasms, contortion of hands and arms, and multiple secondary symptoms resulting in marked disability. Adjustments of the cervical spine were performed utilizing the Atlas Orthogonal percussion instrument. Omega-3 fatty acid supplementation was prescribed. Results: After 6 weeks of treatment, all symptoms were resolved except for mild tingling and fatigue. All disability scores improved after 3 months. **Conclusion:** The results suggest that chiropractic adjustments of the cervical spine and dietary modifications were effective in relieving symptoms and disability associated with MS. Because of the low risk, this treatment regimen should be considered in MS cases. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Profile of Patients Who Seek Chiropractic Care at a Public Health Center in Southern Brazil

Daniel Hillebrand Rohsig, **Thiana Paula Schmidt dos Santos**, and **Marta Casagrande Saraiva**, Feevale University

Introduction: The aim of the present retrospective study was to identify the sociodemographic profile of patients submitted to chiropractic treatment within the Brazilian public health care system, during the first year of availability of chiropractic care at a public health center located in a city in Southern Brazil. **Methods:** The study used secondary data collected from 242 chiropractic patients' files at the health center. **Results:** Most patients were married women who were homemakers. The average age was 47.8 years. The most prevalent chief complaint was low back pain, present in 31.4% of the sample. There were 34 physician referrals, which represented 14.05% of the population treated by chiropractic. For this group, the most prevalent chief complaint was also low back pain (38.2%). **Discussion and Conclusion:** Hopefully this study will bring attention to chiropractic treatment within the Brazilian health care system and its benefits, promoting the inclusion of this profession within this system so it can benefit the population. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Case Management of a 2½-Year-Old Female With a 35° Scoliosis and Two Hemivertebrae: Outcome of Adjusting Protocols Showing a Positive Response to Chiropractic Care

Martin Rosen and **Charles Blum**, Sacro Occipital Technique Organization – USA

Introduction: A 2½-year-old female during a routine physical examination at age 6 months by her pediatrician was determined to have adolescent idiopathic scoliosis and two hemivertebrae. **Methods:** Ultrasound, X-rays, magnetic resonance imaging, and Moire study(s) performed noted a 35° thoracic curve. Due to the progression of the scoliosis, an orthopedic consult was made who suggested a surgical spinal fusion. Before surgery, the patient was examined and treated at this office using specific Sacro Occipital Technique (SOT) and cranial protocols. The patient was put on a 6-week intensive care program at two visits per week for the first 6 weeks. **Results:** Six weeks after her initial chiropractic adjustment, the patient was reexamined by the orthopedic surgeon and the evaluation and follow-up Moire study revealed a significant reduction in the scoliosis. Surgery was postponed and the orthopedic surgeon directed follow-up Moire studies every 6 months for 4 years. Her last Moire study showed almost complete resolution of her scoliosis, kyphosis, and lordosis. **Conclusion:** During those periods of time when the medical physician is only monitoring the patient or preparing for possible surgical intervention, there would be an optimal opportunity for a trial period of conservative chiropractic care. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Is There a Link Between Crawling and Idiopathic Low Back Pain in Young Adults or Children? A Retrospective Case Series

Bernardo Sañudo-Diez, Private Practice, and **Charles Blum**, Sacro Occipital Technique Organization – USA

Introduction: The purpose of this case series is to investigate if there is any relationship between lack of infant crawling and lower back pain (LBP) in childhood. **Case Series:** A retrospective review was made of patient records that met the following selection criteria: (1) the patient reported that the patient (child or young adult) had not crawled as an infant, and (2) the patient presented for care for nontraumatic and idiopathic significant LBP. Twenty-five patients reviewed from 2005 to 2010 fit those selection criteria. **Results:** Of the 25 children or young adults, the ages ranged from 3 to 13 years old, with the average age at 8.84 years old. Lumbosacral angles were measured and ranged from 12° to 33°, with an average of 24.8°. **Conclusion:** LBP in the pediatric population, as in adults, is a common condition, with some studies even showing prevalence as high as 70% to 80% by age 20. A rethinking of the evolution of LBP in adults may need to shift from local recent factors affecting an adult's LBP to possible childhood onset, which may relate to gross motor development related to a lack of crawling and a patient's lumbosacral angle. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Common Carotid Artery: Rare Presentation of Level of Bifurcation

Bahram Sardarabadi and **Everett Johnson**, Parker University

The common carotid artery (CCA) is the major blood vessel of the head and neck. Both right and left CCAs in the neck are housed most medial to the internal jugular vein and anterior to the vagus nerve within the carotid sheath. Each CCA bifurcates into external (EC) and internal (IC) carotid arteries at approximately the superior border of the thyroid cartilage of larynx, which is located at the level of the 3rd to 4th cervical vertebrae. An 81-year-old male cadaver was dissected as a normal course of study in a gross human anatomy laboratory. Bilaterally the CCAs were isolated and care was taken to measure the anatomical location and relationship of CCA to the cricoid cartilage. The observation revealed that the location of the CCA was in the region of the level of the 5th cervical vertebrae. The frequency of this variation in the population is roughly 5%. Practitioners using soft tissue techniques, such as trigger point therapy, ischemic compression, or transverse friction massage, to treat dysfunctions of the sternocleidomastoid muscle should be knowledgeable of the variable locations for splitting of the CCA and use caution when treating this muscle. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Resolution of Pediatric Conjunctivitis Using the Chiropractic Adjustment: A Case Report

Christopher Shoff, Private Practice

Introduction: Acute infectious conjunctivitis is the most common pediatric eye infection treated by physicians and is often self-limiting, usually resolving in days. Treatment with antibiotics is at odds with the recommendations of the Red Eye guideline and other evidence. **Methods:** The patient is an infant who was born prematurely and developed right eye conjunctivitis during hospitalization. He was treated with antibiotics and saw his local physician but continued to have problems. The patient presented with colicky symptoms and was treated with a light Diversified and Logan Basic chiropractic adjustment. **Results:** The grandmother reported that after the first visit the right eye conjunctivitis resolved. The patient continued with a course of seven visits and the conjunctivitis did not recur. **Discussion:** The results indicate there might be a positive correlation. No previous scientific evidence exists but several mechanisms might explain the positive correlation. **Conclusion:** A firm conclusion cannot be determined from the results of a single case study, although this does suggest that chiropractic care could be beneficial for resolution of conjunctivitis. Further investigation appears to be warranted. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Assessment of Two Patients With Benign Joint Hypermobility Syndrome and Chronic Pain

Richard Strunk, **Lyndsay Andrews**, and **Mark Pfefer**, Cleveland Chiropractic College

Introduction: Benign joint hypermobility syndrome (BJHS) is a genetic condition frequently associated with joint pain. The purpose of this article is to present history and musculoskeletal examination findings of two patients with BJHS and chronic pain. **Methods and Clinical Features:** Two female patients, 27 and 32 years of age, with normal body mass indexes presented with a history of chronic spinal pain unrelieved by traditional high-velocity, low-amplitude spinal manipulation (SM). **Results:** Each patient was diagnosed with BJHS. Both patients displayed joint hypermobility in the thumb(s), the fifth metacarpophalangeal joint, and the lumbopelvic joints by having greater than normal range of motion in specific predetermined directions. The 27-year-old also had hyperextension of her elbows and myopia, while the 32-year-old had varicose veins and skin striae. Both had a history of back pain for greater than 3 months, key postural abnormalities, and significant muscle imbalances. **Discussion:** The diagnosis of BJHS is still evolving, which presents challenges for practicing doctors and researchers. **Conclusion:** A detailed description of two patients with BJHS is presented. It is important for doctors to be able assess pain patients for BJHS so these patients can be managed appropriately. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Subluxation-Based Chiropractic Care of a Patient With Anderson-Fabry's Disease and Effect of Treatment on Patient's Quality of Life

Thomas A. Taylor III, Life University

Objective: The objective of this case study is to raise awareness of Anderson-Fabry's disease (FD) in the chiropractic community and to demonstrate the impact of chiropractic interventions on quality of life. **Clinical Feature:** A 46-year-old woman diagnosed with FD presented with neck pain, cervical radiculopathy, vertebral subluxations, multiple disc herniations, neuropathy in extremities, low back pain, and symptoms complicated by FD. **Intervention and Outcome:** Contact-specific, high-velocity, low-amplitude adjustments (Gonstead technique) were applied to sites of vertebral subluxations. There was a substantial decrease in pain symptomology postchiropractic intervention. There was also a marked increase in SF-36 quality of life assessment score. **Conclusion:** The chiropractic care of individuals with FD, as well as multiple musculoskeletal conditions, is possible. Marked resolution of the subject's symptoms and reduction of vertebral subluxation were found despite the subject's comorbidity FD. According to RAND's SF-36, there are remarkable increases in postfindings regarding physical and mental component summary scores. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Sacro Occipital Technique: Occipital Fiber Technique on a Canine

Jean Thompson, **Heidi Bockhold**, Options for Animals College of Animal Chiropractic, and **Charles Blum**, Sacro Occipital Technique Organization - USA

Introduction: Integrative health care for animals is increasing, yet there is limited research specifically identifying the use of chiropractic in canines. This case report utilizes a chiropractic technique called occipital fiber analysis and treatment (OFT), used within the Sacro Occipital Technique (SOT) to analyze and treat spinal dysfunction. **Case Report:** A 10-year-old female cattle canine with known chronic symptoms of bloating, mood changes, joint pain, and chronic psoas tension, unresponsive to prior interventions, presented for chiropractic care. **Methods:** OFT was applied to a female 10-year-old canine and treatment consisted of chiropractic manipulative reflex technique (CMRT). The procedure was performed at the main campus of Options for Animals College of Animal Chiropractic, with the owner's consent. **Results:** Following the OFT/CMRT procedure, the reflex pain areas were significantly diminished and the canine was relaxed, with decreased bloating and joint pain, and the psoas tension was notably less. **Conclusion:** This case report had limitations because it is based on the owner's and consulting veterinarian's interpretation. However, it did appear from the canine's significant response that there was a positive correlation between OFT and CMRT typically applied to humans when applied to the canine in this study. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Gonstead Chiropractic Care in a Case With Multiple Pelvic Fractures: A Case Report

Michael Tomasello, **Lydia Dever**, and **Greg Haas**, Life University

The prevalence of pelvic fractures in the United States is 37 out of every 100,000 individuals annually, accounting for 2% to 8% of all skeletal injuries. The purpose of the case report is to demonstrate the application-specific Gonstead chiropractic adjusting and the favorable outcomes in the recovery from traumatic pelvic fractures. This report presents a 45-year-old female chiropractor who sustained numerous injuries in a motorcycle accident, including multiple pelvic fractures. Care was delivered using Gonstead chiropractic technique to the lumbar spine and pelvis after removal of the external pelvic fixation device that was removed 8 weeks postinjury. The pelvis adjusting was focused to the left sacroiliac joint after the lag screw was removed from the joint. The patient return to limited work within 5 months and progressively increased the work capacity until she was a full capacity after 2 years. The patient demonstrated on a SF-36 a PCS score 2% above an MCS of 22% above the national average 2 years postinjury. This case demonstrates that chiropractic care can be utilized in recovery from traumatic pelvic fractures. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)

Use of "Study Sheets" During Classroom Examinations to Enhance Student Learning

Shari Wynd and **John Mrozek**, Texas Chiropractic College

Introduction: The literature supports that repeated reading of study notes and lecture notes and repeated open-book testing may enhance the students' learning of difficult concepts. Therefore, the purpose of this study was to quantify the accuracy and completeness of student study sheets used during examinations. **Methods:** Final grades were determined for each student. Study sheets used in the final exam were collected and assessed using a Likert scale that rated the completeness and accuracy of the individual student's study sheet. **Results:** The mode for study sheet scores for students obtaining an A or B was a score of 3 out of 3 (complete and accurate). Students obtaining a grade of C had a mode study sheet score of 2 (accurate, but not complete), while students who failed the course had a mode study sheet score of 0 (not present or inaccurate and incomplete). **Conclusion:** There were a greater number of students who obtained an overall grade of an A or B whose study sheets were of high quality, suggesting that encouraging high-quality study sheets may assist in student performance in basic sciences. (This is an abstract from a conference presentation and does not represent a full paper that has been peer reviewed and accepted for publication.)