

The Journal of Pain

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Original Reports

1 **Functional Connectivity Is Associated With Altered Brain Chemistry in Women With Endometriosis-Associated Chronic Pelvic Pain**

Sawsan As-Sanie, Jieun Kim, Tobias Schmidt-Wilcke, Pia C. Sundgren, Daniel J. Clauw, Vitaly Napadow, and Richard E. Harris

In contrast to women with relatively asymptomatic endometriosis, women with endometriosis-associated chronic pelvic pain (CPP) exhibit non-pelvic hyperalgesia and decreased gray matter volume in key neural pain processing regions. While these findings suggest central pain amplification in endometriosis-associated CPP, the underlying changes in brain chemistry remain unknown. These findings support central pain amplification as a mechanism of CPP. The authors suggest that clinicians should consider the use of adjunctive therapies that target central pain dysfunction in these women.

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ON THE COVER

Chronic back pain (CBP) is associated with circumscribed atrophy in gray matter (GM) predominantly localized in areas of the so-called "pain matrix" and the prefrontal cortex. Previous studies reported inconsistent results on the alteration of brain areas in chronic pain conditions. This study used voxel-based morphometry for high resolution magnetic resonance images to investigate the association of CBP and regional GM volume in 111 individuals with CBP and 432 pain free controls. The results may contribute to our understanding of the transition from acute to chronic pain in some areas of the brain. See Fritz et al, Page 111.

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Clinically Effective Treatment of Fibromyalgia Pain With High-Definition Transcranial Direct Current Stimulation: Phase II Open-Label Dose Optimization

Laura Castillo-Saavedra, Nigel Gebodh, Marom Bikson, Camilo Diaz-Cruz, Rivail Brandao, Livia Coutinho, Dennis Truong, Abhishek Datta, Revital Shani-Hershkovich, Michal Weiss, Ilan Laufer, Amit Reches, Ziv Peremen, Amir Geva, Lucas C. Parra, and Felipe Fregni

Despite promising preliminary results in treating fibromyalgia pain, no neuromodulation technique has been adopted in clinical practice due to limited efficacy, low response rate, or poor tolerability. The authors of this Phase II open-label trial sought to define methodology for a clinically effective treatment. This article presents the effort to outline an optimized protocol using High-Definition transcranial Direct Current Stimulation. Results show a significant benefit in pain reduction in half of study participants.

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Investigating the Primary Care Management of Low Back Pain: A Simulated Patient Study

Christina Abdel Shaheed, Brett McFarlane, Chris G. Maher, Kylie A. Williams, Jenny Bergin, Andrew Matthews, and Andrew J. McLachlan

A limitation of studies of primary care for low back pain (LBP) is that they are not based upon direct observation of the clinical encounter, and may under or over-estimate the extent of evidence practice gaps. This study observed management recommendations provided in primary care using a simulated patient approach. Trained actors requested an over-the-counter medicine or asked for management advice for one of two simulated patient scenarios, and visits were audio-recorded. Problems that were noted included inadequate self-care advice and failing to appropriately recommend imaging or prompt medical review where indicated. These results can inform implementation strategies to improve primary care management of LBP.

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Peripheral Neuritis Trauma in Pigs: A Neuropathic Pain Model

David Castel, Itai Sabbag, Ori Brenner, and Sigal Meilin

The use of rodents in preclinical studies has contributed greatly to our understanding of the pathophysiology of chronic neuropathic pain. Unfortunately, these animal models are somewhat limited due to their poor clinical translation. This article presents the characterization of a new peripheral neuritis trauma (PNT) model that was developed in pigs. The pig PNT model could potentially help close the translational gap between preclinical and clinical responses, and may contribute to improved efficacy and safety of candidate drugs.

50 Bedding Material Affects Mechanical Thresholds, Heat Thresholds, and Texture Preference

Francie Moehring, Crystal L. O'Hara, and Cheryl L. Stucky

It has long been known that the bedding type animals are housed on can affect breeding behavior and cage environment. Yet little is known about its effects on evoked behavior responses or nonreflexive behaviors. C57BL/6 mice were housed for two weeks on one of five bedding types. These findings indicate that bedding type can markedly affect the dynamic range of mechanical and heat behavior assays under normal and tissue injury conditions. Therefore, careful consideration should be used when selecting routine cage bedding material for animals that will be tested in behavioral somatosensory assays.

65 Pain-Contingent Interruption and Resumption of Work Goals: A Within-Day Diary Analysis

Morris Okun, Paul Karoly, Chung Jung Mun, and Hanjoe Kim

Under certain circumstances, chronic pain and pain-related attributions can have positive motivational effects on work goal resumption. In this study, variables were assessed via questionnaires and a 21-day diary. On days when participants reported nonpursuit of work goals in the afternoon, increases in pain-related attributions were positively associated with higher negative affective reactions which, in turn, were associated with an increased likelihood of same-day work goal resumption. Stress amplified the relation between pain-related attributions and negative affective reactions, and chronic pain severity was positively related to work goal resumption. These findings may contribute to the development of interruption management techniques.

76 Cognitive-Behavioral–Based Physical Therapy for Patients With Chronic Pain Undergoing Lumbar Spine Surgery: A Randomized Controlled Trial

Kristin R. Archer, Clinton J. Devin, Susan W. Vanston, Tatsuki Koyama, Sharon E. Phillips, Steven Z. George, Matthew J. McGirt, Dan M. Spengler, Oran S. Aaronson, Joseph S. Cheng, and Stephen T. Wegener

The purpose of this study was to determine the efficacy of a cognitive-behavioral–based physical therapy (CBPT) program for improving outcomes in patients following lumbar spine surgery. A randomized controlled trial was conducted in 86 adults undergoing a laminectomy with or without arthrodesis for a lumbar degenerative condition. Results suggest a targeted CBPT program may result in significant and clinically meaningful improvement in postoperative outcomes. CBPT has the potential to be an evidence-based program that clinicians can recommend for patients at-risk for poor recovery following spine surgery.

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Effect of Alexithymia and Emotional Repression on Postsurgical Pain in Women With Breast Cancer: A Prospective Longitudinal 12-Month Study

Sophie Baudic, Christian Jayr, Aline Albi-Feldzer, Jacques Fermanian, Anne Masselin-Dubois, Didier Bouhassira, and Nadine Attal

Alexithymia, the inability to identify and express emotions, and emotional repression, a defensive mechanism aiming to avoid unpleasant emotional experience, have been associated with chronic pain and medical illness including breast cancer. However, whether these constructs may predict pain after breast cancer surgery has not been assessed. This study considered the predictive value of alexithymia and emotional repression in postoperative pain. This research, conducted in women with breast cancer surgery, shows that alexithymia but not emotional repression predicts postsurgical pain. These results highlight the role of dysfunction of emotional processing in the development of postsurgical pain.

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The Impact of Opioid Risk Reduction Initiatives on High-Dose Opioid Prescribing for Patients on Chronic Opioid Therapy

Michael Von Korff, Sascha Dublin, Rod L. Walker, Michael Parchman, Susan M. Shortreed, Ryan N. Hansen, and Kathleen Saunders

Avoiding high opioid doses may reduce chronic opioid therapy (COT) risks, but the feasibility of reducing opioid doses in community practice is unknown. Washington State and a health plan's group practice implemented initiatives to reduce high dose COT prescribing. The group practice physicians were exposed to both initiatives, while its contracted physicians were exposed only to statewide changes. The authors assessed whether these initiatives reduced opioid doses among COT patients. The proportion receiving excess opioid days supplied declined from 24.0 to 10.4% among group practice COT patients and from 20.1 to 14.7% among COT patients of contracted physicians.

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Chronic Back Pain Is Associated With Decreased Prefrontal and Anterior Insular Gray Matter: Results From a Population-Based Cohort Study

Hans-Christian Fritz, James H. McAuley, Katharina Wittfeld, Katrin Hegenscheid, Carsten O. Schmidt, Sönke Langner, and Martin Lotze

Chronic back pain (CBP) is associated with circumscribed atrophy in gray matter (GM) predominantly localized in areas of the so called "pain matrix" and the prefrontal cortex. Previous studies reported inconsistent results for brain areas altered in chronic pain conditions. This may be partly attributable to small sample sizes, medication use or emotional comorbidities. This study used voxel-based morphometry for high resolution magnetic resonance images to investigate the association of CBP and regional GM volume in 111 individuals with CBP and 432 pain free controls. The authors confirmed prefrontal and insular volume differences, which might contribute to the transition from acute to chronic pain, but not for other locations.

119 **Total Western Diet Alters Mechanical and Thermal Sensitivity and Prolongs Hypersensitivity Following Complete Freund's Adjuvant in Mice**

Stacie K. Totsch, Megan E. Waite, Ashleigh Tomkovich, Tammie L. Quinn, Barbara A. Gower, and Robert E. Sorge

Obesity and chronic pain are often comorbid and their rates are rising. It is currently unknown whether increased pain is due to greater weight or poor diet quality, or both. The authors utilized a Total Western Diet to investigate the functional and physiological consequences of nutritionally-poor diet in mice. The authors report that prolonged exposure to poor diet quality resulted in altered acute nociceptive sensitivity, systemic inflammation and persistent pain following inflammatory pain induction. Findings highlight the negative effects of poor diet quality with respect to recovery from hypersensitivity and susceptibility to chronic pain. A complete understanding of the impact of diet can aid in treatment and recovery dynamics in human clinical patients.

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