

# The Journal of Pain

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### Focus Article

#### **881** What's in a Name? The Case of Emotional Disclosure of Pain-Related Distress

Annmarie Cano and Liesbet Goubert

Pain behavior plays a key role in many theoretical models of pain, with many of these models conceptualizing pain behaviors as potentially detrimental to patient functioning. This article offers an expanded conceptualization of one type of pain behavior – emotional disclosure of pain-related distress – by demonstrating the theoretical and empirical distinctions between this behavior and other pain behaviors. This perspective may enhance clinical work and research aimed at identifying adaptive responses to these behaviors to improve pain adjustment.

### Critical Review

#### **889** Classical Conditioning Differences Associated With Chronic Pain: A Systematic Review

Daniel S. Harvie, G. Lorimer Moseley, Susan L. Hillier, and Ann Meulders

Prominent clinical models of chronic pain propose a fundamental role of classical conditioning in the development of pain-related disability. If classical conditioning is key to this process, then people with chronic pain may show a different response to pain-related conditioned stimuli than healthy controls. The authors considered this theory by undertaking a comprehensive and systematic review of the literature. The review revealed preliminary evidence that people with chronic pain may exhibit less differential unconditioned stimulus-expectancy and fear learning. This characteristic may contribute to widespread fear-avoidance behavior. The assumption that altered classical conditioning may be a predisposing or maintaining factor for chronic pain remains to be verified.

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#### ON THE COVER

More than one-third of patients with metastatic bone disease experience moderate to severe pain, which debilitates their quality of life. Cancer-induced bone pain (CIBP) remains a major challenge in advanced cancer patients, due to lack of understanding of its mechanisms. In this study, the authors investigated the specific cellular mechanisms of GABA receptors (GABABRs) in the development and maintenance of CIBP in rats. See Zhou et al, page 933.

## Original Reports

899

### **An Improved Rodent Model of Trigeminal Neuropathic Pain by Unilateral Chronic Constriction Injury of Distal Infraorbital Nerve**

Weihua Ding, Zerong You, Shiqian Shen, Jinsheng Yang, Grewo Lim, Jason T. Doheny, Lucy Chen, Shengmei Zhu, and Jianren Mao

The number of studies on trigeminal nerve injury using animal models remains limited. A rodent model of trigeminal neuropathic pain was first developed in 1994, in which chronic constriction injury is induced by ligation of the infraorbital nerve (IoN-CCI). Unfortunately, the surgical procedure in this model is complicated and more difficult than ligation of peripheral nerves. The aim of this study was to improve on the current procedure of IoN ligation to induce trigeminal neuropathic pain in rats. The authors maintain that this IoN-CCI model is likely to make it more accessible to study the cellular and molecular mechanisms of neuropathic pain caused by trigeminal nerve damage.

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### **Beliefs About Pharmaceutical Medicines and Natural Remedies Explain Individual Variation in Placebo Analgesia**

Andrew Watkinson, Sarah C. E. Chapman, and Rob Horne

Placebo effects contribute to responses to active analgesics. Understanding how beliefs about different types of medicines influence placebo analgesia may be useful in understanding variations in treatment response. Using the cold-pressor paradigm, the authors found that placebo analgesia is influenced by beliefs about natural remedies, pharmaceutical medicines and about pain.

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### **Endogenous Opioid Function and Responses to Morphine: The Moderating Effects of Anger Expressiveness**

John W. Burns, Stephen Bruehl, Christopher R. France, Erik Schuster, Daria Orłowska, Melissa Chont, Rajnish K. Gupta, and Asokumar Buvaanendran

Long-term use of opioid analgesics may be ineffective or associated with significant negative side effects for some people. At present, there is no sound method of identifying optimal opioid candidates. In this study, individuals with chronic low back pain and healthy controls underwent ischemic pain induction under placebo, opioid blockade (naloxone), and morphine in counterbalanced order. The authors report that low back pain patients who express anger and also have deficient endogenous opioid function may be poor candidates for opioid therapy. In contrast, low back pain patients who tend not to express anger and who also have deficient endogenous opioid function may make optimal candidates for opioid therapy.

## **933 The Role of Spinal GABAB Receptors in Cancer-Induced Bone Pain in Rats**

Ya-Qun Zhou, Shu-Ping Chen, Dai-Qiang Liu, Anne Manyande, Wen Zhang, Shao-Bing Yang, Bing-Rui Xiong, Qiao-Chu Fu, Zhen-peng Song, Heike Rittner, Da-Wei Ye, and Yu-Ke Tian

More than one-third of patients with metastatic bone disease experience moderate to severe pain, which debilitates their quality of life. Cancer-induced bone pain (CIBP) remains a major challenge in advanced cancer patients, due to lack of understanding of its mechanisms. In this study, the authors investigated the specific cellular mechanisms of GABA receptors (GABABRs) in the development and maintenance of CIBP in rats. Results show that both acute and chronic intrathecal treatment with baclofen, a GABABR agonist, significantly attenuated CIBP-induced mechanical allodynia and ambulatory pain. These findings provide evidence that spinal GABABR may become a potential therapeutic target for the management of CIBP.

## **947 Predictors of Acute Postsurgical Pain After Inguinal Hernioplasty**

Patrícia R. Pinto, Artur Vieira, Diamantino Pereira, and Armando Almeida

Acute post-surgical pain (APSP) is a common and anticipated problem after surgery with detrimental consequences, if not appropriately managed. This study examined the independent and joint contribution of pre-surgical demographic, clinical and psychological variables as predictors of APSP intensity, evaluated through an 11-point numerical rating scale, after inguinal hernioplasty. The authors report that, when adjusted for depression, helplessness and magnification scores, variables including younger age, previous chronic pain, pre-surgical anxiety and the rumination component of pain catastrophizing are significant predictors of APSP intensity after surgery. This helps highlight potential intervention targets for the design of interventions focused on APSP prevention and management.

## **956 Predictors of Prescription Opioid Use 4 Months After Traumatic Musculoskeletal Injury and Corrective Surgery: A Prospective Study**

Brittany N. Rosenbloom, Colin J. L. McCartney, Sonya Canzian, Hans J. Kreder, and Joel Katz

This work examined the incidence and predictors of persistent prescription opioid use four months after traumatic injury. Adults who sustained a traumatic musculoskeletal injury were recruited to participate in this observational prospective, longitudinal study within 14 days of injury. The authors identify predictive factors for prescription opioid use following traumatic musculoskeletal injury, namely severe pain and a poor sense of control over the pain. The findings highlight the importance of using prospective longitudinal study designs to understand why patients continue to use prescription opioids after major tissue damaging events.

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**Twin Peaks? No Evidence of Bimodal Distribution of Outcomes in Clinical Trials of Nonsurgical Interventions for Spinal Pain: An Exploratory Analysis**

Neil E. O'Connell, Steven J. Kamper, Matthew L. Stevens, and Qiang Li

The presence of bimodal outcome distributions has been used as a justification for conducting responder analyses, in addition to, or in place of analyses of mean difference, in clinical trials and systematic reviews of interventions for pain. The aim of this study was to investigate participants' pain outcomes for evidence of bimodal distribution. This research sourced data on participant outcomes from a sample of 10 trials of non-surgical interventions (exercise, manual therapy, medication) for spinal pain. Findings suggest that bimodal distribution of outcomes should not be assumed in interventions for spinal pain, and do not support the automatic prioritization of responder analyses over the average between group difference in the evaluation of treatment effectiveness for spinal pain.

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**Facilitated Pronociceptive Pain Mechanisms in Radiating Back Pain Compared With Localized Back Pain**

Henrik Bjarke Vaegter, Thorvaldur Skuli Palsson, and Thomas Graven-Nielsen

Facilitated pain mechanisms and impaired pain inhibition are often found in chronic pain patients. This study compared clinical pain profiles, pain sensitivity, pro-nociceptive and antinociceptive mechanisms in patients with localized low back pain, localized neck pain, low back and radiating leg pain, and neck and radiating arm pain. It was hypothesized that patients with radiating pain had facilitated pain mechanisms and impaired pain inhibition, compared with localized pain patients. Results show that patients with radiating pain patterns demonstrated facilitated temporal summation, suggesting differences in the underlying pain mechanisms. These findings have clinical implications, as the underlying mechanisms in different back pain conditions may require different treatment strategies.

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**Validation of the Pain Resilience Scale in a Chronic Pain Sample**

Brett Ankawi, P. Maxwell Slepian, Lina K. Himawan, and Christopher R. France

Psychosocial factors that protect against negative outcomes for individuals with chronic pain have received increased attention recently. Pain resilience is one such factor. A measure of pain-specific resilience, the Pain Resilience Scale, was previously identified as a better predictor of acute pain tolerance than general resilience. This study sought to validate this measure in a chronic pain sample. A confirmatory factor analysis confirmed the two-factor structure of the Pain Resilience Scale previously observed among respondents without chronic pain, although one item from each subscale was dropped. For this sample, structural equation modeling demonstrated that pain resilience contributes unique variance to a model including pain acceptance and pain self-efficacy in predicting quality of life and pain intensity. Further, pain resilience was a better fit in this model than general resilience, strengthening the argument for assessing pain resilience over general resilience.

**994** **Minocycline Prevents Muscular Pain Hypersensitivity and Cutaneous Allodynia Produced by Repeated Intramuscular Injections of Hypertonic Saline in Healthy Human Participants**

Mohamad Samir Samour, Saad Saulat Nagi,  
Peter John Shortland, and David Anthony Mahns

Minocycline, a glial suppressor, prevents behavioral hypersensitivities in animal models of peripheral nerve injury. However, clinical trials have produced mixed results. This study addressed two questions: can repeated injections of hypertonic saline in humans induce persistent hypersensitivity? Can pre-treatment with minocycline, a tetracycline antibiotic with microglial inhibitory effects, prevent the onset of hypersensitivity? The authors report that four repeated injections of hypertonic saline at 48 hour intervals induce a state of persistent hypersensitivity in healthy human participants. This hypersensitivity was characterized by bilateral muscular hyperalgesia and cutaneous cold allodynia, symptoms commonly reported in many chronic pain conditions. Minocycline pre-treatment abolished the development of this state.

**1006** **Migraine Prevention Using Different Frequencies of Transcutaneous Occipital Nerve Stimulation: A Randomized Controlled Trial**

Yinglu Liu, Zhao Dong, Rongfei Wang, Ran Ao, Xun Han,  
Wenjing Tang, and Shengyuan Yu

Migraine is a common disease and is a cause of disability worldwide. This study's objective was to evaluate the efficacy and tolerability of transcutaneous occipital nerve stimulation (tONS) in patients with migraine, and to explore whether different tONS frequencies influenced treatment effectiveness. This was a randomized, controlled trial of tONS for the prevention of migraine. This research introduces tONS as a new approach for migraine presentation, and shows tONS is well-tolerated and could be considered as a promising treatment for patients who prefer non-pharmacological therapy.

**1016** **Erratum**

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