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FOCUS ARTICLES

1249 Exercise-Induced Hypoalgesia in Pain-Free and Chronic Pain Populations: State of the Art and Future Directions

David Rice, Jo Nijs, Eva Kosek, Timothy Wideman, Monika I Hasenbring, Kelli Koltyn, Thomas Graven-Nielsen, and Andrea Polli

Exercise is considered an important component of effective chronic pain management and it is well established that long term exercise training provides pain relief. In healthy, pain-free populations, a single bout of aerobic or resistance exercise typically leads to exercise induced hypoalgesia (EIH). In contrast, EIH is more variable in chronic pain populations and is more frequently impaired. Pain exacerbation with exercise may be a major barrier to adherence, precipitating a cycle that can worsen both pain and disability. In this article, the authors provide an overview of EIH across different chronic pain conditions. Existing findings are critically reviewed, clinical implications are discussed and recommendations are offered for future research.

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ON THE COVER

Type 1 diabetes is often associated with many co-morbid complications. Diabetic peripheral neuropathy (DPN) stands out to be one of the most common. Wnt signaling pathway has been investigated extensively for its diverse metabolic and pain modulating mechanisms and recently, its involvement has been postulated in the development of neuropathic pain. Blockade of this pathway using Wnt inhibitors provided neuroprotection in experimental DPN in rats. This study emphasizes the involvement of Wnt signaling pathway in diabetic peripheral neuropathy (DPN). This study may provide a basis for exploring the therapeutic potential of Wnt inhibitors in DPN patients. See Resham and Sharma, Page 1338.

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A Definition of “Flare” in Low Back Pain: A Multiphase Process Involving Perspectives of Individuals With Low Back Pain and Expert Consensus

Nathalia Costa, Manuela L. Ferreira, Jenny Setchell, Joanna Makovey, Tanya Dekroo, Aron Downie, Ashish Diwan, Bart Koes, Bard Natvig, Bill Vicenzino, David Hunter, Eric J. Roseen, Eva Rasmussen-Barr, Francis Guillemin, Jan Hartvigsen, Kim Bennell, Leonardo Costa, Luciana Macedo, Marina Pinheiro, Martin Underwood, Mauritus Van Tulder, Melker Johansson, Paul Enthoven, Peter Kent, Peter O’Sullivan, Pradeep Suri, Stephane Genevay, and Paul W. Hodges

Low back pain (LBP) varies over time. Consumers, clinicians and researchers use various terms to describe LBP fluctuations, such as episodes, recurrences and flares. Although ‘flare’ is commonly used, there is no consensus on how it is defined. This study aimed to obtain consensus for a LBP flare definition using a mixed-method approach. A flare-up is a worsening a condition that lasts form hours to weeks, and that is difficult to tolerate, and that impact typical activities or emotions. The definition that has emerged represents consumers’ views, involves expert consensus, and is understandable in clinical and research contexts.

1276

AAPT Diagnostic Criteria for Chronic Painful Temporomandibular Disorders

Richard Ohrbach, and Samuel F. Dworkin

To resolve problems arising from the lack of a comprehensive, reliable and utilitarian taxonomy of common chronic pain conditions, the Analgesic, Anesthetic, and Addiction Clinical Trial Translations Innovations Opportunities and Networks (ACTTION) public-private partnership has joined together with the U.S. Food and Drug Administration (FDA) and with the American Pain Society (APS) to develop an evidence-based taxonomy applicable to the research and clinical management of common chronic pain conditions. The purpose of this article is to provide an evidence-based, multidimensional taxonomy for the most common chronic orofacial pain conditions, identified as temporomandibular disorders (TMDs), by translating current TMD diagnostic criteria into the AAPT framework. This will help provide a structure for consistent clinical application within the broader health care settings and for future research on the TMDs.

ORIGINAL REPORTS**1293 Development and Characterization of An Injury-free Model of Functional Pain in Rats by Exposure to Red Light**

Rajesh Khanna, Amol Patwardhan, Xiaofang Yang, Wennan Li, Song Cai, Yingshi Ji, Lindsey A. Chew, Angie Dorame, Shreya S. Bellampalli, Ryan W. Schmoll, Janalee Gordon, Aubin Moutal, Todd W. Vanderah, Frank Porreca, and Mohab M. Ibrahim

There are an increasing number of reports pointing to biological effects of exposure to different colors of light, such as blue light being associated with sleep issues, and light therapy used to control depression. In this study, rats were exposed to red light emitting diodes (RLED). RLED induced thermal hyperalgesia and mechanical allodynia without injury, offering a rodent model useful for the study of functional pain syndromes with widespread pain. This research demonstrates the effect of light exposure on nociceptive thresholds and adds evidence to the emerging understanding of biological effects of light of different colors in animals and humans. Understanding the underlying biology of red light-induced wide-spread pain may offer insights into functional pain states.

1307 Pain-Induced Reduction in Corticomotor Excitability Is Counteracted by Combined Action-Observation and Motor Imagery

Dennis Boye Larsen, Thomas Graven-Nielsen, and Shellie Ann Boudreau

This is the first study to demonstrate a method counteracting the reduction in corticomotor excitability (CE) associated with acute pain, the authors report, and the results advance therapeutic possibilities for individuals with chronic musculoskeletal pain. Researchers aimed to modulate pain-induced CE by performing action observation and motor imagery (AOMI) during experimental muscle pain. Counteracting effects of AOMI on pain-inducing reduction in CE were demonstrated.

1317 Patient Willingness to Pay for Reductions in Chronic Low Back Pain and Chronic Neck Pain

Patricia M. Herman, Jill E. Luoto, Mallika Kommareddi, Melony E. Sorbero, and Ian D. Coulter

Many recommended nonpharmacologic therapies for patients with chronic spinal pain require visits to providers such as acupuncturists and chiropractors. Little information is available to inform third-party payers' coverage policies regarding ongoing use of these therapies. This study offers contingent valuation-based estimates of patient willingness-to-pay for pain reduction. These results provide some evidence for co-pay levels and their relationship to patient demand, but call into question ongoing coverage policies that require documentation of continued improvement or clinical deterioration with treatment withdrawal.

1328 Psychometric properties of the Dutch-Flemish Patient-Reported Outcomes Measurement Information System Pain Behavior item bank in patients with musculoskeletal complaints

Wouter Schuller, Caroline B. Terwee, Thomas Klausch, Leo D. Roorda, Daphne C. Rohrich, Raymond W. Ostelo, Berend Terluin, and Henrica C.W. de Vet

Pain behaviors have been associated with pain intensity, disability, depression, and with the development of chronic pain. A self-report tool of pain behavior has been developed by the Patient-Reported Outcomes Measurement Information System (PROMIS) initiative. This research studied the psychometric properties of the 39-item Dutch-Flemish PROMIS Pain Behavior item bank in a large primary care population of patients with musculoskeletal complaints. It showed that the Pain Behavior item bank has limitations when used in this population.

1338 Pharmacologic Inhibition of Porcupine, Disheveled, and β -Catenin in Wnt Signaling Pathway Ameliorates Diabetic Peripheral Neuropathy in Rats

Kahkashan Resham, and Shyam S. Sharma

Type 1 diabetes is often associated with many co-morbid complications, out of which, diabetic peripheral neuropathy (DPN), stands out to be one of the most common. Wnt signaling pathway has been investigated extensively for its diverse metabolic and pain modulating mechanisms and recently its involvement has been postulated in the development of neuropathic pain. Blockade of this pathway using Wnt inhibitors provided neuroprotection in experimental DPN in rats. This study emphasizes the involvement of Wnt signaling pathway in diabetic peripheral neuropathy (DPN). This study may provide a basis for exploring the therapeutic potential of Wnt inhibitors in DPN patients.

1353 The Effect of Induced and Chronic Pain on Attention

David J. Moore, Samantha M. Meints, Asimina Lazaridou, Devin Johnson, Olivia Franceschelli, Marise Cornelius, Kristin Schreiber, and Robert. R. Edwards

Pain has well established effects on attention. Literature exists which have examined the effects of experimentally induced pain and consider cognitive performance in patients with chronic pain states. However, no study to date has examined the combined or differing effects of these two manifestations of pain in a single study. This article presents the effects of an acute, induced pain model on cognitive performance in both fibromyalgia and healthy control populations. This work demonstrates that the effects of acute and chronic pain on attention are different, suggesting different models need to be developed to understand these phenomena.

1362 Cannabis Use Preferences and Decision-making Among a Cross-sectional Cohort of Medical Cannabis Patients with Chronic Pain

Kevin F. Boehnke, J. Ryan Scott, Evangelos Litinas, Suzanne Sisley, Daniel J. Clauw, Jenna Goesling, and David A. Williams

Cannabis is commonly used to manage chronic pain, but use patterns among individuals with chronic pain have not been well-characterized. This report focuses on cannabinoid, administration route, and product selection preferences among medical cannabis users with chronic pain from an ongoing, online survey. This work also examined whether these preferences are affected by differences in sex, intentions behind use, and experience with cannabis. Overall, only 2.6% of participants selected cannabis products with input from a medical professional, although 54.9% relied on advice from dispensary employees. Female and novice users were less likely to smoke or vaporize but more likely to rank edibles, tinctures, and topicals as a first-choice administration route. This highlights the wide variability in dosing cannabis preferences among medical cannabis users with chronic pain, which may be relevant for clinical outcomes.

1373 Transient Effects of Sleep on Next-Day Pain and Fatigue in Older Adults With Symptomatic Osteoarthritis

Daniel Whibley, Tiffany J. Braley, Anna L. Kratz, and Susan L. Murphy

Poor sleep quality has been associated with greater pain and fatigue in people living with osteoarthritis (OA). In older age adults with hip or knee OA, weekly fluctuations in sleep interference and OA-related pain have been shown to track with each other. This study sought to determine whether sleep impacts the diurnal pattern of next-day OA-related pain and fatigue, and represents details from 160 participants who provided 785 days of data. On awakening from a night of poor-quality sleep, pain and fatigue intensity were heightened. However, the effect was not sustained throughout the day, suggesting the morning may be an optimal time for symptom interventions.