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(184) Influence of testing modality on ratings of first and second pain in humans

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The administration of brief noxious heat can be used to induce a sharp first pain and a more delayed sensation that is called second pain. Computer controlled devices which ramp temperature from a baseline to a desired temperature and return to baseline or contact the skin already at the desired temperature and withdraw are typically used. No studies have directly compare pain ratings between ramping and tapping paradigms. The purpose of this study was to investigate the differences between the use of a constant contact thermode that used a 40º/sec ramp rate (Pathway model CHEPS, PATH) and two forms of "tapping" thermodes, Thermo-Electric Stimulation System (TESS) and Thermoelectric Stimulation and Response Processing System (TSAR) (Neuroanalytics, Gainesville, FL). Nine female subjects (21yrs $\pm$ 6) were tested on these three thermal devices (PATH, TESS, TSAR) at the palm and forearm. Stimulus response curves (SRC) for both first and second pain, and profiles temporal summation of second pain (TS) were calculated using ratings on an electronic pain scale of 0-100. The SRC protocols were designed to elicit first and second pain which differed by stimulation duration (700ms vs. 2 sec). The temperature that elicited a first pain rating of 25 $\pm$ 5 for each machine and individual subject were used for the TS protocol for that machine and individual. The TS protocol utilized 10 contact times (700 ms stimulus interval and 2.5 sec inter-stimulus-interval). The results demonstrated the steepest slopes for the SRC to come from the TESS (0.73 $\pm$ 0.17) and the TSAR for the TS values for both palm and forearm. These results may be explained by the influence of both the ramping temperature and thermode size on results obtained through the use of different thermal pain modalities.

(186) Catastrophizing moderates the relation between pain intensity and pain-related distress

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The subjectivity implicit in reporting pain severity poses a clinical conundrum. Many commonly used pain assessment tools, such as the Visual Analogue Scale, Verbal Rating Scale, and Numeric Rating Scale (NRS) present pain as a unidimensional construct altering only in severity. Contemporary constructs of pain, however, posit a more complex biopsychosocial model. The aim of this study was to contribute to understanding of what a simple pain rating encompasses by exploring the relation between ratings of pain intensity and pain related distress. The secondary aim was to explore catastrophizing as it relates to these variables. Data in this study were collected as part of a larger randomized controlled trial evaluating the effect of TENS on pain following total knee replacement. Pain severity and pain-related distress were measured with a 0 - 20 NRS and catastrophizing was measured by the Pain Catastrophizing Scale. Our sample (N = 263) was 57% female with a mean age of 61 years (SD = 9.62). Pain severity and pain related distress were highly correlated ($r = .81$, $p < .05$) with 41% of participants reporting identical scores on both measures (22% when excluding those who reported '0' on both measures). Secondary regression analyses aimed to determine whether catastrophizing moderated the relation between pain severity and distress, such that catastrophizing would enhance the relation between high levels of pain severity and distress. The full model was significant: $F (3, 240) = 162.10$, $p < .05$, indicating pain severity, catastrophizing, and the interaction term accounted for 67% (Adjusted R^2) of the variance in pain-related distress. Further, findings supported catastrophizing as a moderator between pain severity and distress ($\beta = .08$, $p = .05$). This study contributes to improving our understanding of the multidimensional construct of pain and its assessment. This study was supported by NIH grant R01NR009844.

A11 Screening Tools

(185) Reducing the respondent burden of the Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R): an approach using curtailment and stochastic curtailment

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The Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R), an empirically derived self-report questionnaire, is widely used in clinical practice to screen patients with chronic pain for potential aberrant medication-related behaviors. Some patients might be reluctant to take the SOAPP-R due to its length of 24 items; therefore, shorter versions are needed. Two methods to reduce respondent burden, curtailment and stochastic curtailment, have been shown to lower average test lengths in computer-based administration of other instruments. These methods monitor each respondent's answers while the questionnaire is underway and terminate the assessment if further testing cannot, or is not likely to, affect whether the given respondent will be screened in or screened out. This retrospective study evaluated the degree to which curtailment and stochastic curtailment reduce the average test length of the SOAPP-R without compromising sensitivity and specificity. Data from 428 chronic noncancer pain patients who had taken the full-length SOAPP-R, and whose aberrant medication-related behavior had been assessed by the Aberrant Drug Behavior Index (ADBI), were used in post-hoc simulation in which curtailment and stochastic curtailment were examined. The full-length SOAPP-R, curtailment, and stochastic curtailment were compared in terms of average test length and sensitivity and specificity for predicting the ADBI. In 10-fold cross-validation, the sensitivity and specificity of the full-length SOAPP-R were 0.745 and 0.671, respectively. The sensitivity and specificity of curtailment were identical to those of the full-length test, while curtailment's average test length was 26% lower. The sensitivity and specificity of stochastic curtailment were within 0.035 of those of the full-length test, while stochastic curtailment's average test length was up to 65% lower. It was concluded that curtailment and stochastic curtailment are promising tools for reducing the respondent burden of the SOAPP-R when this questionnaire is administered via computer. Research reported in this publication was supported by the National Institute On Drug Abuse of the National Institutes of Health under Award Number R03DA036683. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

(187) Use of a risk-stratification tool in identification of potential adrenal suppression preceding steroid injection therapy in chronic pain patients

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Patients who present for steroid injections are not adequately screened for potential hypothalamic-pituitary-adrenal (HPA) axis suppression from previous steroid exposure. Chronic pain patients often have multiple providers leading to the risk of redundant or contradictory treatments. Patients often receive oral or inhaled steroids, or joint/peri-spinal injections that are not reported by the patient or recorded in the available medical records. Yet, HPA suppression has been reported with a single intra-articular injection.[1] We implemented a quality improvement questionnaire to more comprehensively screen patients for risk of HPA suppression secondary to prior and/or concurrent corticosteroid use. This questionnaire was given to adult patients seen in a University Pain Management Clinic, who were being considered for a steroid injection, to define the extent of exposure to corticosteroids either by mouth, topically, inhaled, or systemic/local injection within the past six months. Each "yes" response to questions about previous glucocorticoid use within the last one month received three points, while exposures during the preceding five months received one point. A positive screen was defined as three points or more. Two hundred patients completed the questionnaire. Eighty-nine patients (44.5%) screened positive for significant steroid exposure with a screen score of three or above. The average screen score for the screen positive group was 6.31 +/- 3.47 (range 3-22). Patients who screened positive tended to be female (78.9% vs 55.0%, $p < 0.008$), but similar in other demographic characteristics (age, BMI, and diabetes status). Our results suggest that patients receive steroids from many sources and may be at risk for existing HPA suppression. Further testing is necessary to determine if these patients indeed have biochemical evidence of adrenal suppression. Utilization of a screening questionnaire might help identify patients who should be considered for HPA testing prior to steroid injections. (1. Duclos, Med Sci Sports Exerc, 2007.)