understanding of the role of prayer in coping with pain. Providers may consider facilitating an active style of prayer in their religious/spiritual patients with pain.

(452) Neuropeptide Y as a Potential Neurobiological Mediator of Exercise Benefits for Pain Sensitivity in Patients with Chronic Pain and PTSD

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This pilot study assessed the effects of acute exercise challenge testing and progressive exercise training on levels of neuropeptide Y (NPY), an anti-stress and anti-nociceptive neurohormone. We observed relationships between NPY and pain threshold and tolerance measured by the cold pressor test in two groups: trauma-exposed non-veterans and Veterans either a) with (n=5) or b) without comorbid chronic pain and PTSD (n=2). The sample (n=7) was 57.1% male (n=4) and 42.9% female (n=3) with mean age of 38 years. Across all participants, at the endpoint of their exercise training and as assessed by the acute maximum load exercise challenge test, VO2 peak, an indicator of cardiorespiratory fitness, correlated with baseline NPY levels (r=−.75, p<.05) as well as peak NPY levels (r=.61, p=.14). Pain threshold, a physiological indicator of pain sensitivity, correlated with peak NPY levels (r=.60, p=.20) as well as the change in NPY from baseline to its peak (r=.96, p<.001). The change in pain tolerance, a psychological indicator of pain sensitivity, from pre- to post-exercise training, correlated with the pre- to post-training change in baseline NPY levels (r=.61, p=.15) as well as the change in peak NPY levels (r=.54, p=.12). Our work shows a strong relationship between VO2 peak and plasma NPY levels and these levels correlated with pain sensitivity after exercise. We are continuing this work to determine if increasing fitness, through progressive exercise training, can increase an individual’s capacity to release NPY, resulting in significant improvements in pain sensitivity for patients with chronic pain and PTSD.

(453) Self-reported physical activity is related to less pressure pain sensitivity but not to acute muscle pain

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Regular physical activity (PA) is often recommended for the treatment of acute and chronic pain conditions. However, PA levels continue to decline in many populations. While research increasingly suggests that PA may reduce pain and facilitate the prevention of chronic pain, preliminary data demonstrated few relationships between self-reported PA and experimental pain. Therefore, the purpose of this study was to investigate, in a large sample, the relationships between self-reported PA and experimental pain. We assessed primary and referred pain (RP) intensity and incidence, pain pressure thresholds (PPTs), and 7-day PA in response to a tibialis anterior intramuscular infusion of 30mL saline, moderate dose exercise (3x/wk), and high dose exercise (5x/wk). Pain was rated using an 11-point verbal pain scale. Primary and RP incidence was defined as pain ≥ 0.5 at the infusion site or anterior ankle/foot, respectively. PPTs were assessed at the tibialis anterior and the anterior ankle before and after the infusion. PA was assessed via the International Physical Activity Questionnaire. Due to multiple comparisons, significance was set at p<0.01. Baseline PPTs were higher at both the tibialis anterior and anterior ankle (p<0.01) in those reporting greater leisure activity. Primary and RP intensity, incidence, and change in PPTs were not strongly related to PA type or level (p>0.01). These results suggest that PA is not related to acute experimental muscle pain. However, less baseline pressure pain sensitivity is evident in young, healthy adults who report greater leisure activity. These findings suggest that PA may have differential effects on pain acting through different mechanisms. Future studies are needed to further explore these underlying mechanisms. Supported in part by NIAMS R03 and the U.S. Army. The opinions or assertions contained herein are the private views of the authors and are not official views of the Army or the DoD.

(454) Dose-dependent effect of walking exercise on pressure pain in humans

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Chronic pain is a serious problem in the U.S. affecting 116 million adults. Chronic pain presents itself as both an isolated condition, as well as a comorbidity with other conditions, such as cancer and obesity. Although numerous pharmacological interventions exist to treat chronic pain, few have proven to be effective. Exercise has been frequently touted as an effective treatment in reducing chronic pain. However, the most efficacious dose of exercise has yet to be established. The purpose of this study is to determine the most optimal dose of exercise required to reduce acute pain in healthy human participants with the goal of translating these results to clinical populations. After screening, healthy participants were randomized into 1 of 4 groups: control (no exercise), low dose exercise (3x/week), moderate dose exercise (5x/week) and high dose exercise (10x/week). Over a 7-day period, participants performed 30 minute sessions of moderate intensity walking on a treadmill during assigned exercise days. Sensitivity thresholds to painful thermal stimulation and pain-related pressure stimulation were examined at baseline and post-exercise intervention. Participants also rated the intensity and unpleasantness of both thermal and pressure stimuli. Significant results have been found in both the moderate and high dose exercise groups, with both groups demonstrating reduced sensitivity to pressure intensity and unpleasantness. The moderate dose group had the greatest reduction in ratings of pain. This suggests that our least dose of exercise is not enough to reduce pain and that the moderate dose of exercise is optimal to translate to the clinic. Overall, the results of this study will have important implications for prescribing exercise to chronic pain patients.

(455) The clinical efficacy of repeat magnetic resonance imaging in patients with chronic spine pain

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The appropriate use of diagnostic imaging can improve the care of patients with chronic low back and neck pain; in stark contrast, the inappropriate use can increase harm to patients and healthcare costs. The rate of lumbar magnetic resonance imaging (MRI) has increased at an alarming rate without evidence of concomitant improvements in patient outcomes. In examining interval changes in MRIs of patients with chronic back and neck pain, this study strove to quantify the efficacy of repeat imaging. Data on 89 consecutive patients with multiple lumbar and cervical MRI was collected from January 2014 to August 2015. Data assessed included gender, age, weight, BMI, diagnosis, MRI results, and surgical treatment post-imaging. Radiologic changes were defined as increases in severity of abnormality at a particular disk level by the radiologists of record. There were 58 (65.2%) females and 31 (34.8%) males of mean age 59.1 years, BMI 31.2. Out of 192 MRIs, 130 (67%)were lumbar and 62 (32.3%) cervical. 79 (60.8%) lumbar MRIs and 47 (75.8%) cervical MRIs did not show interval changes. Of MRIs with changes, 17 (34.6%) lumbar and 5 (33.4%) cervical with severe changes. The mean time in years between recent and previous MRI was 2.9 for severe changes and 2.0 for no changes on cervical MRI (p=0.215) and 2.6 for severe changes and 1.7 for no changes on lumbar MRI (p=0.018). 7 (11.5%) patients had surgery after cervical MRI and none after lumbar MRI. Significant number of repeat MRIs did not show interval changes or resulted in surgical treatment post-imaging. (Fynn et al., Journal of Orthopaedic & Sport Physical Therapy, 2011; Tetsuo et al., J. Spinal Disorder Tech, 2005)

(456) Efficacy of Transcranial Direct Current Stimulation on Clinical Pain Severity in Older Adults with Knee Osteoarthritis Pain: A Double-Blind, Randomized, Sham-Controlled Pilot Clinical Study

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Arthritis is a leading cause of pain, impaired daily activity, and disability in people 45 years and older. Osteoarthritis (OA) is the most common arthritic condition, and the knee is the most commonly affected joint. Because pharmacologic treatments can increase the risk of adverse events among older adults, there is a growing interest in nonpharmacologic interventions targeting central nervous system pain processing for this population. Specifically, noninvasive brain stimulation, such as transcranial direct current stimulation (tDCS), has received significant attention for the treatment of pain in chronic conditions owing to its neuroregulatory effects. We sought to assess the preliminary efficacy of tDCS on clinical pain severity in adults with knee OA pain. We conducted a double-blind, randomized, sham-controlled pilot clinical study in 40 community-dwelling...