

Project: Diagnostical markers of central nervous sensitization in chronic pain disorders

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Central nervous sensitization to pain refers to pathologically increased pain sensitivity, where exposure to low intensity pain stimuli leads to the experience of extreme pain. This state is related to exaggerated sensitivity of the central nervous nociceptive system, i.e., the brain and medullary networks involved in pain processing. Central nervous sensitization is frequently seen in chronic pain disorders like chronic back pain, migraine, tension-type headache and irritable bowel syndrome. Currently, no satisfactory diagnostical methods are available for quantification of central nervous pain sensitization. This project investigates a method referred to as slowly repeated evoked pain (SREP), which has been developed to assess central nervous sensitization in chronic pain patients. The technique is based on repeated application of low-intensity pain stimuli; when central nervous sensitization is present, pain intensity linearly increases across stimulus repetitions. The diagnostic precision (reliability, sensitivity and specificity) of the technique is tested in various disorders, including fibromyalgia, rheumatoid arthritis, interstitial cystitis and irritable bowel syndrome. The method is compared with traditional methods from experimental algometry (e.g., windup and temporal summation of pain), and is related to central nervous and peripheral indicators of pain and stress (e.g., cerebral blood flow, electrodermal activity and heart rate variability). Moreover, the SREP protocol is optimized and adjusted according to the clinical requirements. The project is supported by the Spanish Ministry of Science and Innovation; the collaboration between UMIT TIROL and University of Jaén is supported by an ERASMUS+ agreement between both universities.

Previous publication from the project

De la Coba González, P., Reyes del Paso, G.A., Duschek, S., Bruehl, S. (2018). Blood pressure-related pain modulation in fibromyalgia: Differentiating between static versus dynamic pain indicators. *International Journal of Psychophysiology*, 134, 79-85. doi: 10.1016/j.ijpsycho.2018.10.006