



# Proceedings of Pain Science in Motion Colloquium—3rd edition. May 31st—June 2nd, University of Genoa-Campus of Savona, Italy

## Giving insight in pain research of tomorrow!

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The research findings and the pain models of tomorrow can be found in the research questions of today. Therefore, 7 years ago, within the Pain in Motion group, the idea was launched to start a podium dedicated to PhD researchers. In contrast to traditional congresses, the idea was to present starting or ongoing research. This resulted in the first Pain Science in Motion Colloquium. Researchers were invited not to present existing data and finished research, but primarily to present starting research projects with their underlying theories and designs. This gave the chance for young researchers to present on an international stage early in their career, to meet fellow PhD pain researchers and discuss and share their research. Moreover, young researchers have the opportunity to encounter 5 senior researchers that are invited to give a keynote lecture in the Pain Science in Motion Congress, but in particular to discuss with them during the “meet the expert” sessions.

After Brussels (2015) and Stockholm (2017), the *III edition of the Pain Science in Motion colloquium* will be held in 2019 in Savona, Italy, at the Campus of the University of Genoa. This year, thanks to a multidisciplinary group of PhD researchers coming from all over the world, the program offers 8 oral sessions with 40 presentations and 10 thematic poster sessions with 50 posters with short interactive presentations.

The keynote experts invited will be Prof. Fabrizio Benedetti (University of Torino, Italy) Prof. Rob Smeets (University of Maastricht, Netherlands), Jessica van Oosterwijck (University of Gent/Antwerpen, Belgium), Prof. Alberto Gallace (University of Milano Bicocca, Italy), Prof. Deborah Falla (University of Birmingham, UK).

We hope that the reading of the short abstracts of the selected oral presentations can be inspiring for future young researchers who will increase the quality of the forthcoming editions of the Pain Science in Motion Colloquium.

More information about the present colloquium, the 2019 version and future editions can be found at the congress website: [www.PSIM2019.org](http://www.PSIM2019.org) or at the website of Pain in Motion: <http://www.paininmotion.be>

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### Offset analgesia in patients with migraine and healthy controls

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Migraine is a common and debilitating disease, but the pathophysiology is poorly understood. Dysfunctional endogenous pain modulation is discussed as a contributing factor to the development and/or maintenance of the disease. Offset analgesia (OA) is a frequently used paradigm to identify endogenous pain modulation. The aim of this study is to assess OA in patients with migraine and healthy controls. Twenty-one patients with migraine and 21 healthy age and gender matched healthy controls were recruited. In both groups, selected tests from the quantitative sensory testing protocol were assessed. OA was performed using a three-temperature stimulus paradigm on both sides of the forehead and the forearm. An individualized temperature of 50/100 for 5 seconds (T1), +1°C for 5 seconds (T2), and again the individualized temperature for 20 seconds (T3) were applied. In addition, 3 constant temperature stimuli of T1 were applied for 30 seconds. The constant and offset trials as well as the examined body regions were performed in a randomized order. Results and conclusions: The project is in its final phase. To date, 15 patients with migraine (examined interictally) and 15 healthy controls have been included.

**Objectives:** To determine whether daily physical activity levels are predictive of conditioned pain modulation (CPM) in healthy adults.

**Methods:** Seven days prior to CPM assessment, physical activity levels of 105 healthy adults were evaluated using self-report and continuous accelerometry. CPM was evaluated through a standardized heterotopic noxious conditioning stimulation protocol. Before, during, and after immersion of the non-dominant hand into hot water, pressure pain thresholds were evaluated at the dominant hand, neck, and leg. Hierarchical regression was conducted to determine a predictive relationship between physical activity and CPM efficacy, meanwhile controlling for potential confounders. Higher self-reported levels of moderate physical activity (eg, cycling <16 km/h) significantly predicted greater CPM magnitude. When the number per steps per day, as registered with accelerometry, was  $\geq 10,000$  (=active) or  $\geq 12,500$  (=highly active) this significantly predicted more efficacious CPM. Physical activity appears essential to the efficacy of CPM, and thus forms one of the confounding factors which influence CPM. Walking and performing moderately intense activities are achievable for chronic pain patients who are known to have dysfunctional CPM, and the current results are promising for the implementation of these activities in rehabilitation programs aimed at improving CPM and combat pain.

### The role of pain cognitions in healthcare utilization in patients undergoing surgery for lumbar radiculopathy: a randomized controlled trial

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First, to explore the relationship between pain cognitions and healthcare use (HCU) of patients scheduled for lumbar radiculopathy surgery. Second, to investigate the mediating role of pain cognitions in the mechanism behind HCU post-surgery.

**Methods:** Eligible patients ( $n = 120$ ) are randomized to a perioperative pain neuroscience education (targeting pain cognitions) group or control group. HCU, Tampa Scale for Kinesiophobia (TSK), Pain Catastrophizing Scale (PCS) and Pain Vigilance and Awareness Questionnaire (PVAQ) are assessed at baseline and until 2 years post-surgery. Baseline associations are investigated univariately. Therapy effects and causal interactions are investigated multivariately. Preliminary baseline findings ( $n = 100$ ) show that, patients scoring above the PCS cut-off use more types of analgesics ( $P = 0.017$ ). High numbers of neurosurgeon visits are associated with worse catastrophizing ( $P = 0.069$ ) and especially rumination ( $P = 0.023$ ). Strong opioid use is also related to higher PCS rumination scores ( $P = 0.076$ ). Using analgesics in general is related to higher PVAQ attention to pain subscale scores ( $P = 0.094$ ).

**Conclusions:** Preliminary baseline findings underscore the possible association between pain cognitions and HCU. However, based on these explorative analyses no strong conclusions can be made. Further analyses will provide insight in the clinical relevance of these relationships and possible causal interactions between pain cognitions and HCU.

### Body perception in fibromyalgic patients: a mixed-method research study

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Preliminary observations report “phantom sensations” of swelling hands and feet in fibromyalgic patients (), similar to those described in neuropathic conditions. Patients may not refer this kind of “bizarre” perceptual disturbances, if not directly questioned, for fear of being considered mentally disturbed. Moreover, a specific test or validated questionnaires are not available thus, the only way to explore this phenomenon remain the patient’s history itself.

**Methods:** A mixed-method study will be conducted on a convenience sample of 100 adult patients. A series of questionnaires will be administered to describe the clinical features of the sample. Patients reporting at least 2 affirmative answers on customized survey investigating body perception disturbances will be considered eligible for qualitative inquiry. Subjective experience of own’s body perception will be explored through semi-structured interviews: answers will be audio-recorded and transcribed verbatim to perform the descriptive phenomenological analysis.

**Results:** in mixed-method research design quantitative and qualitative data collection are sequential: findings emerging will represent the integration of both datasets. A better knowledge about body perception may be a starting point to obtain prevalence data on perceptual dysfunctions in fibromyalgic patients, and to study a possible correlation between these phenomena and clinical or demographic features.

### Using a humanoid robot to distract children with cancer undergoing painful procedures: a pilot randomized controlled trial

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Cancer survivors are more likely to develop chronic pain (1), which may not only arise from treatments but also from children’s pain memory (2). Humanoid robot distraction has proven to be effective in reducing healthy children’s pain and distress during vaccinations (3). Whether these benefits generalize to children with cancer and pain memories, needs to be examined. Children (8–12 years) with a portal catheter and their parents will be recruited. Baseline assessments include child’s anticipated pain and fear, self-efficacy, attention control, attention bias, energy-balanced behavior, pressure hyperalgesia, child’s and parent’s catastrophizing, parental emotional and behavioral responses. After randomization to control group (usual care) or intervention group (robot distraction), child’s experienced self-reported pain and fear and parent’s pain catastrophizing and emotional