



Faculty Seminar

# Recent advances in pain assessment and treatment

By

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## **Recent advances in pain assessment and treatment**

During my talk I will discuss and present an overview of my studies on several 'burning' issues in the field of pain.

As of today, the use of the 0-10 pain scale is considered as the 'gold standard' in both clinical and experimental settings. Other approaches to assess pain include the use of psychophysical pain paradigms termed quantitative sensory testing (QST). QST is based on recording subject's responses to pain evoked by noxious stimulus of various modalities (e.g. chemical, thermal, mechanical, electrical). In the last decade advanced, clinically relevant, QST paradigms were developed. These dynamic paradigms usually include measuring subject's response to multiple stimuli, often in more than one body location. Changes in response are calculated and constitute measures for subject's pain modulation efficacy. These enable the opportunity to study specific pain mechanisms.

Another approach that can potentially be used for pain assessment is based on noninvasive recording of autonomic measures. While the autonomic outflow is known to be associated with pain for many years, its lack of specificity holds back its clinical usefulness. The use of combination of multiple autonomic parameters, plus state of the art machine learning algorithms may allow objective assessment of pain.

As far as pain treatment is concerned, many patients who suffer from chronic pain do not response to the best available treatments and there is a real need for new therapies. One promising approach is the use of non-invasive brain stimulation, with accumulative evidence suggesting that repeated Transcranial Magnetic Stimulation (rTMS) of the motor cortex can reduce pain. Advances in software and newer coil design are available, yet much research is needed to maximize TMS analgesic potential. The analgesic effects of other brain stimulation modalities such as transcranial direct current stimulation (tDCS) and transcranial alternate current stimulation have only been rarely studied.

Toward the end of my talk I will mention some of my other research interests in the field of pain.