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A Multi-Modal Biosensor to Measure Soft Tissue Pain and Myofascial Trigger Points (MFTP's) for Evidence Based Practices

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Background: Chronic pain affects 1 in 3 Americans costing up to \$635 billion each year. [1] Subjective reports cannot distinguish the experience of pain from that due to actual tissue damage and palpation and pain questionnaires frequently underestimate pain. [2, 3] There is limited consensus on myofascial trigger point (MFTP) pain and claims for effective interventions need to be supported by objective evidence. [4]

Methods: A literature review on algometry, thermography, galvanometers, stethoscopes and analysis of research suggesting inflammations as the root cause of pain.

Results: Content validity shows inflammation as a root cause of pain. Inflammation is measurably elevated in active trigger points and sensitizes nociceptors causing hyperalgesia (pain). [5, 6] Research literature supports algometry, galvanometers, thermography and stethoscopes as valid devices in measuring aspects of inflammation. However, these devices are individually limited, expensive and time consuming.



Conclusion: Combining these individual devices into a multi-modal biosensor provides concurrent measurements of inflammatory MFTP pain. Digitized data collected in a software program can show treatment outcomes, providing a tool for evidence based practice.

(Figure 1) Software displays can graph measurements showing differentials between a healthy control (column 1) and a MFTP (columns 2, 3, 4, 5). Algometry, pressure (green), Pain Pressure Threshold on a scale of 1 to 5 (purple), Galvanic skin response (blue), Thermography (red), Stethoscope for crepitus sounds (yellow), counts (black).

References: [1] Reichard (2011). Human Health

Services (HHS) Institute of Medicine (IOM)

[2] Edited by H. Merskey and N. Bogduk (1994) International Association for the Study of Pain <http://www.iasp-pain.org>

[3] Hovi, Lauri (1999). Dec, European Journal of Cancer Care; Vol. 8 Issue 4, p213-219, 6p, 4 Charts, 2, European Journal of Cancer Care. <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2354.1999.00171.x/full>

[4] Tough EA, White AR, Richards S, Campbell J. 2007 Mar-Apr;23(3):278-86. Clin J Pain. <http://www.ncbi.nlm.nih.gov/pubmed/17314589>

[5] Siegfried Mense, Robert D. Gerwin (2010) Muscle Pain: Diagnosis and Treatment

[6] Adrienne E., Dubin1 and Ardem Patapoutian1, 2 (2010) November 1, Published in Volume 120, Issue 11, J Clin Invest. 2010; 120(11):3760–3772. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2964977/>