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

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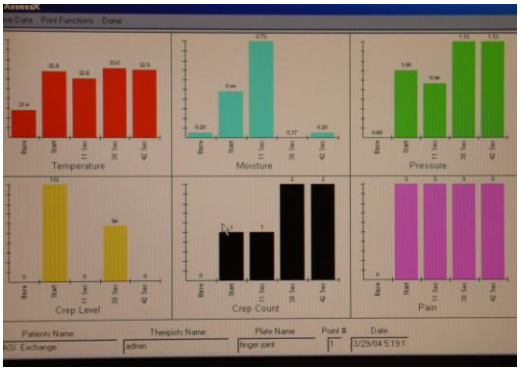
BACKGROUND: Chronic pain affects 1 in 3 Americans costing up to $635 billion each year. [1] Subjective reports cannot distinguish the experience of pain from that due to actual tissue damage and palpation and pain questionnaires frequently underestimate pain. [2, 3] There is limited consensus on myofascial 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 hyperalgia (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

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