The use of objective data to improve interexaminer reliability

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Abstract

BACKGROUND: In Osteopathic Manipulative Medicine (OMM) and Manual/Musculoskeletal Medicine (MMM), palpatory diagnosis is performed on a regular basis to diagnose somatic dysfunction (SD). This examination requires careful and precise touch coupled with subjective interpretation by individual examiners who may have been trained to evaluate SD through different methods. Interexaminer reliability studies aim to minimize variance by providing quantifiable scientific data to evaluate specific test protocols which can then be taught to practitioners. In a previous PCOM study, two examiners independently diagnosed innominate bone dysfunction lateralized using the ASIS compression test on a large group of subjects. A pressure monitoring system (IsoTOUCH®, Chattanooga TN) has been used in various studies at the PCOM Human Performance & Biomechanics Laboratory (Kuchera, Jean et al 2006 & Kuchera, Vardy et al 2005) to quantify or standardize forces used in palpatory diagnosis or OMM/MMM treatment applications. This study gathered data during the tesing phase of a new and improved model of this system, using the protocol of the previous ASIS interexaminer reliability study. The data collected during standardization of the system was analyzed in the same manner as the previous study to compare the results of interexaminer reliability to results achieved using live data feed for baseline pressure synchronization between examiners.

METHODS: The examiners involved in this project were the same palpators using the same protocol employed for the data collection in the previous ASIS Compression Test interexaminer reliability study. The basic protocol employed the following: For the ASIS Compression Test, examiners applied slight bilateral compression until both SI joints were engaged. The ASIS Compression Test was then interpreted by sensing relative restriction in the end-feel of each of two pulsatile compressions transmitted into each side, starting with the left ASIS. These test pulses were delivered sequentially through the volar wrist of each hand to the ASIS while maintaining engagement pressure with the other hand. A positive ASIS Compression Test was defined as restricted motion on one side greater than the other. If both tests were positive, that side which was the most restricted was indicated. All subjects were required to remain on the same padded table, without turning over or moving, between examiners. Palpation monitors (IsoTOUCH®, Chattanooga TN) were added to this protocol. The pressure sensors were calibrated by each examiner every time the monitors were placed on their hands. Two sets of data were collected from the same twelve subjects. In the first data set the palpation monitors were used and data was collected on the IsoTOUCH® software. The live data feed was not revealed to the examiners during this set of data collection. In the second data set, the live pressure data feed was used during the ASIS Compression Test to match baseline sacroiliac joint engagement pressure (in pounds) between examiners, and then pulsatile compressions were delivered sequentially. The mode of 6-8 lbs of pressure found in the first data set was the range used for the bilateral engagement pressure.

RESULTS: In the previously reported data, Cohen's kappa (κ) statistic values ranged from poor (κ=0.020 on the left) to moderate (κ=0.425 on the right) for ASIS compression test by two examiners on 330 subjects. The kappa values for this study during the non-synchronized set of data was 0.324 (left) and 0.396 (right). The percentage agreement for both left and right sided diagnosis was 33.3%. The percentage agreement for left same diagnosis was 33.3% and for right side same diagnosis was 41.7%. The second set of data obtained, using objective IsoTOUCH® live feedback, kappa values of 0.828 for left sided findings and 0.736 for right sided findings were determined. The percentage agreement for this data set was 66.7% for both left and right sided diagnosis. Left side same diagnoses were 83.3% and right side same diagnoses 75.0%.

CONCLUSIONS: Incorporating feedback from objective measurement of pressures results in a significant increase in both percentage agreement and kappa value. Interexaminer agreement improved with the use of IsoTOUCH® palpation monitors to match baseline pressure used during ASIS compression testing for sacroiliac joint motion

testing. These monitors could be used in future larger interexaminer reliability studies in efforts to standardize OMM/MMM palpatory diagnosing and treatment.