A Detailed Statistical Analysis of Chest Muscle Recruitment Patterns During Activities of Daily Life

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An alternate movement strategy, called Move in the Tube (MINT), has been implemented in many hospitals for patients recovering from thoracic surgery but little objective data is available to support its efficacy. The MINT technique involves teaching patients to perform activities of daily living (ADL's) while keeping their shoulders in a neutral position. My research is a retrospective analysis on previously collected Pectoralis Major Electromyography (EMG) data to evaluate the extent to which MINT minimizes asymmetrical pull across the sternal region and also takes into consideration the relationship between age and movement strategy. Subjects in young (18-40 yrs.) and old (60-85 yrs.) cohorts were asked to perform 10 ADL's in a self-selected MINT movement strategy with the left and right side Pectoralis Major EMG data being collected. The sum (SUM) and difference (SYMMETRY) of bilateral EMG data was calculated. The statistical analyses I performed were 2-way ANOVA, Pearson Correlations, 1-way ANOVA, and Tukey's HSD post hoc tests (a = 0.05). The sum of left and right showed that the older subjects had more EMG activity than the younger subjects on all ADL's and 7/10 ADL's using MINT increased EMG activity. For all 10 ADLs, the SUM and SYMMETRY EMG activity were significantly different. Lastly, I found significant correlation between self-selected and MINT for all 10 ADL's in both SUM and SYMMETRY. In conclusion, the results of my study imply that using the MINT movement strategy does not reduce the asymmetrical pull of the Pectoralis Major Muscles during the 10 ADL's that were evaluated.

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