Objective: Self-reports of function are commonly associated with pain ratings, but not actual performance. The aim of this project was to test if actual performance – muscle force production - is related to pain and if increasing, decreasing, or stable changes in force affect the relationship.

Methods: This project conducted secondary analyses of previously collected data. The original study investigated sensory integration of pain, light, and sound stimuli in 32 healthy participants with average age 23.5 years (54.5% male). During the study, muscle pain intensity and force were collected every 3 seconds during a 30s tonic muscle contraction. For the secondary analyses, the direction of change in force (increasing, stable, decreasing) at the time of pain rating and force recording was retrospectively collected on a subsample of 14 participants, which resulted in 23 increasing force epochs, 77 stable force epochs, and 40 decreasing force epochs. Spearman correlations were calculated between pain rating and force produced for all the data and within each direction of change in force and then compared after Fisher’s z transformation.

Results: Overall, there was a statistically significant negative correlation of -.340 between force and pain. The correlation was -.312 when calculated for stable force, -.557 for increasing force, and -.333 for decreasing force. Comparison of the r-values yielded no significant difference between the groups.

Conclusion: This preliminary study suggests that the direction of force does not affect the relationship between pain and force during tonic muscle contraction, but more participants are needed to better answer this question.