INTRODUCTION
Post-Traumatic Stress Disorder (PTSD) and mild Traumatic Brain Injury (mTBI) are pervasive in military and general populations. There is an overlap in some PTSD and mTBI symptomology (e.g. anxiety, depression, fatigue, etc.) but persistent headache is specifically associated with mTBI and is considered to be one of the most disabling types of chronic headaches. Treatment for PTSD and mTBI symptoms is often ineffective and accompanied by side effects. Several groups have reported that Light Touch Manual Therapies (LTMT), applying up to a few hundred grams of pressure, are effective in reducing symptoms of mTBI and PTSD.

This IRB-approved study was conducted at an Intensive Outpatient Program (IOP) for active duty military Service Members (SM) on a large military installation. The IOP was established to treat active duty SM with chronic PTSD using integrative therapies including medical massage, acupuncture and psychotherapy.

HYPOTHESIS
It is expected that LTMT will make a difference in SM symptoms.

DATA COLLECTION INSTRUMENTS
1) Interview Questions
   • On a scale of 0 (no headache) to 10 (most severe headache that you have experienced), how would you rank the intensity of your headache?
   • On a scale of 0 (not at all) to 10 (extremely anxious), how would you rank the intensity of your anxiety?
2) Patient-Reported Outcomes Measurement Information System (PROMIS; www.nihpromis.org). See Table 2 for Item Banks administered. Examples of the questions that were administered for the Pain Interference item bank included: “In the past seven days, how much did pain interfere with your ability to…” Pain Interference measurements were gathered using a Likert scale, with the following possible responses: 1-Not at all; 2-A little bit; 3-Somewhat; 4-Quite a bit; 5-Very much.
3) Quality of Life in Neurological Diseases (Neuro-QoL; www.neuroqol.com). See Table 2 for Item Banks administered.

METHODS
• Ten SM meeting Table 1 criteria completed the study.
• SM were given two one-hour sessions of LTMT one week apart.
• Data were gathered using paper surveys as well as using the Computerized Adaptive Test feature on the Assessment Center (www.assessmentcenter.net).
• Wilcoxon Signed Rank Test was used for data comparisons.

DISCLAIMER
The views expressed in this document are those of the authors and do not reflect the official policy of William Beaumont Army Medical Center, the Department of the Army, or the United States Government.

RESULTS
Qualitative Observations: During LTMT sessions, participants appeared relaxed and many fell asleep in contrast to their pre-session affect when participants seemed very agitated, similar to their peers beginning the IOP program. Participants offered unsolicited remarks that they felt very relaxed during the LTMT session and in many cases, that the reduction in symptom intensity was profound. For example, one participant said, “I feel normal and I haven’t felt like a normal person in years.”

Quantitative Results p < 0.05:
• Headache significantly decreased after each LTMT session (Interview Questions).
• Anxiety significantly decreased after each LTMT session (Interview Questions).
• Pain interference significantly decreased after two LTMT sessions (PROMIS).
• PCL-M significantly increased after two LTMT sessions, consistent with a pattern of change typically seen in PTSD patients initiating treatment (PCL-M).

All other comparisons were p > 0.05.

CONCLUSIONS AND FUTURE DIRECTIONS
Data indicate that mixed LTMT reduced pain interference, headache and anxiety. Further investigations into LTMT such as Brain Curriculum and Craniosacral Therapy are warranted to explore using these non-pharmacological techniques to help the many individuals who have PTSD and mTBI. Studying LTMT in brain or other neuronal systems might yield information about cytoskeletal mechanisms obscured in other systems. The diversity of neuronal cell types and the presence of specialized microdomains within neurons, such as axons, dendrites and dendritic spines, might provide a rich canvas for LTMT-mediated cytoskeletal changes to be expressed in the brain. Transient changes in neuronal shape, perhaps caused by LTMT, may initiate long-term changes in the central nervous system, which in turn may affect headache, anxiety or other physiological processes.

LIMITATIONS
While the sample population (N = 10) is small, it exceeded the minimum of nine participants determined necessary to detect a change in immediate effects on both headache and anxiety. Small sample size, lack of control groups and reliance solely on self-reported data arose from constraints of scheduling and space at the IOP, and personnel and funding.

REFERENCE

FURTHER INFORMATION
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