Pilot Study of Mixed Light Touch Manual Therapies on Soldiers with Chronic Post-Traumatic Stress Disorder and Injury to the Head

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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 symptomatology (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 anxious) 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 day to day activities?" and "In the past seven days, how much did pain interfere with your ability to participate in social activities?" 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.neuroquol.com). See Table 2 for Item Banks administered.

4) PTSD Checklist- Military Version (PCL-M). Each of the 17 PCL-M questions is on a 1-5 Likert scale.

5) Measure Yourself Medical Outcome Profile 2 (MYMOP2; http://www.measuringimpact.org/s4-mymop2) Each of the 4 questions is on a 0-6 Likert scale.

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 before and after each session (Figure 1).
- SM received a customized blend of techniques including Brain Curriculum (Chikly) and CranioSacral Therapy (Upledger) during LTMT sessions.
- 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.

TABLE 1

Gender	**100% male**
Age	**27-45 years old at time of consent**
Inclusion criteria	**Accepted into IOP program**
	Positive screen for TBI
	Self-reported head injury at least 2 years prior to start of study
Exclusion criteria	**Shrapnel or prosthetics in the spine or cranium**
	History of brain surgery
	Fever
	Acute systemic infection
	Previously received LTMT on scalp
	Unable to tolerate light to moderate pressure on scalp or body
	Lactating or pregnant
Diagnosis of chronic PTSD	**100%**
***Diagnosis of headache**	**90%**
***Diagnosis of TBI**	**80%**

*** During retrospective chart review**

FIGURE 1

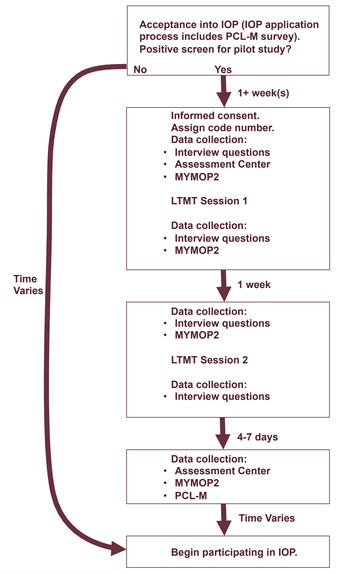

TABLE 2

Variable Name	Desirable Direction of Change (Improvement)	Median (IQR) N=10	Median (IQR) N=10	p-value*	Effect size (d)
		Pre	Post		
Anxiety 1st massage	Decrease	4.5 (5.5)	0.5 (2.0)	**0.016**	1.27
Anxiety 2nd massage	Decrease	4.5 (4.8)	1.0 (3.5)	**0.008**	1.26
Headache 1st massage	Decrease	1.5 (4.8)	0.0 (0.3)	**0.031**	0.82
Headache 2nd massage	Decrease	2.0 (4.0)	0.0 (2.0)	**0.031**	0.84
PCL-M	Decrease	64.0** (11.0)	67.0** (14.0)	**0.013**	1.21
Anxiety Neuro-QoL Bank v1.0	Decrease	1.4 (0.8)	1.2 (0.9)	0.109	1.19
Depression Neuro-QoL Bank v1.0	Decrease	0.8 (0.7)	0.6 (0.8)	0.344	1.81
Emotional & Behavioral Dyscontrol Neuro-QoL Bank v1.0	Decrease	1.6 (0.9)	2.0 (0.6)	1.000	0.88
Fatigue Neuro-QoL Bank v1.0	Decrease	0.6 (1.3)	0.9 (0.9)	0.687	0.84
Pain Behavior PROMIS Bank v1.0	Decrease	1.1 (0.5)	1.1 (0.5)	0.180	0.52
Pain Interference PROMIS Bank v1.0	Decrease	1.4 (0.8)	1.2 (1.2)	**0.039**	1.11
Sleep Disturbance Neuro-QoL Bank v1.0	Decrease	2.0 (1.1)	2.0 (1.2)	0.508	1.31
Stigma Neuro-QoL Bank v1.0	Decrease	0.9 (1.0)	1.1 (0.8)	0.180	0.96
Ability to Participate in SRA Neuro-QoL Bank v1.0	Increase	-1.0 (0.3)	-0.9 (0.5)	1.000	1.08
Applied Cognition Executive Functions Neuro-QoL Bank v1.0	Increase	-2.0 (0.4)	-2.0 (0.3)	0.344	1.12
Applied Cognition General Concerns Neuro-QoL Bank v1.0	Increase	-1.9 (0.8)	-2.0 (1.0)	1.000	1.55
Lower Extremity Function-Mobility Neuro-QoL Bank v1.0	Increase	-0.4 (1.4)	-0.9 (0.6)	0.180	1.26
Positive Affect & Wellbeing Neuro-QoL Bank v1.0	Increase	-0.7 (1.3)	-0.6 (1.1)	0.344	2.00
Satisfaction with SRA Neuro-QoL Bank v1.0	Increase	-1.0 (0.4)	-1.0 (0.6)	0.754	1.50
Upper Extremity-Fine Motor Neuro-QoL Bank v1.0	Increase	-0.3 (1.5)	-0.7 (1.4)	0.727	0.95

IQR= InterQuartile Range, SRA= Social Roles and Activities
*Wilcoxon signed rank test (2 tailed), Bold = $p < 0.05$
** $N = 9$

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

Davis, L., et al., Pilot study of the effects of mixed light touch manual therapies on active duty soldiers with chronic post-traumatic stress disorder and injury to the head, Journal of Bodywork & Movement Therapies (2015), http://dx.doi.org/10.1016/j.jbmt.2015.03.006

FURTHER INFORMATION

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