

Massage for Combat Injuries in Veteran with Undisclosed PTSD: a Retrospective Case Report

Mica Rosenow, MS, LMT BCTMB,^{1*} Niki Munk, PhD, LMT,^{1,2}

¹Indiana University School of Health & Human Sciences - IUPUI, Indianapolis, IN, USA;

²Australian Research Centre in Complementary and Integrative Medicine (ARCCIM), University of Technology Sydney, Sydney, NSW, Australia

Introduction: Massage has shown promise in reducing symptoms related to dissociation and anxiety that can exacerbate chronic pain and suffering. The combat wounded, veteran population is increasing and requires a multidisciplinary approach for comprehensive treatment. This case study examines massage therapy use to improve veteran combat injury rehabilitation and recovery experience through purposive, retrospective, and comprehensive SOAP note review.

Methods: A 31-year-old White male received seven, 60-min, full body massages for combat related shoulder injury complications incurred approximately six years before presentation. The right shoulder sustained a broken humeral head and complete dislocation during a defensive maneuver in a life-threatening attack. This case study utilized data from three different assessments: goniometric measurements for shoulder range of motion, observation and documentation for environmental comfort behaviors, and client self-report for treatment goal attainment. Six weekly, full body, 60-min massages were completed sequentially. A follow-up 60-min treatment was completed at Week 8. Treatment to the injured area included focused trigger point therapy, myofascial release, and proprioceptive neuromuscular facilitation to the neck, shoulder, and chest.

Results: Total percent change for active flexion, extension, abduction, adduction, internal rotation, and external rotation were 12.5, 150, 40, 167, 14.3, and 0%, respectively. Total percent change for passive flexion, extension, abduction, adduction, internal rotation, and external rotation were 63.6, 350, 66.7, 450, 133, and 77.8%, respectively. Environmental comfort behaviors were reduced. Client treatment goals were attained.

Conclusions: Massage therapy provided meaningful benefit to a combat injury for a veteran with PTSD.

KEYWORDS: massage therapy; wounded veteran; PTSD; CARE guidelines; LMT; retrospective case report

INTRODUCTION

Massage shows promise in reducing pain,⁽¹⁾ certain physical limitations,⁽²⁾ and affective symptoms of anxiety⁽²⁾ and dissociation⁽³⁾ that exacerbate chronic pain and suffering.⁽⁴⁾ Dissociation (the experience of disconnect in thoughts, feelings, sense of self, and/or surroundings) and anxiety as symptoms of post-traumatic stress disorder (PTSD) can lead to decreased sensitivity of painful stimuli and increased responsiveness to pain.⁽⁵⁾ The contradiction of decreased sensitivity with increased pain response and increased physical complaints within PTSD populations⁽⁴⁾ creates a need for trauma-informed and educated health-care professionals to provide accommodations and respond with compassion even when the existence of PTSD is undisclosed.

The combat-wounded veteran population is increasing and requires an interdisciplinary approach for comprehensive treatment.⁽⁶⁾ Veterans deployed in Operation Enduring Freedom and Operation Iraqi Freedom are significantly more at risk of developing PTSD if injured,⁽⁷⁾ and report fair to high complementary and alternative medicine utilization.⁽⁸⁾ However, PTSD-related avoidance behaviors can decrease the ability and likelihood to seek appropriate physical and mental health care.⁽⁹⁾ Mental illness also carries the weight of stigma, which increases a likelihood of

nondisclosure whether care is sought or not.⁽¹⁰⁾ Deep feelings of personal responsibility for the reaction to trauma and pervasive, institutionalized, cultural themes of masculinity and weakness increase the likelihood of internalized stigma.^(9,10-13) By believing the discrimination faced as a person with a mental disorder is warranted, additional complications arise when real and/or perceived professional and social disclosure consequences^(12,13) create an opportunity to reinforce symptomatic avoidance behaviors.⁽⁹⁾ These issues are well-documented as barriers for veterans to seek care through the VA, with parallels that ripple through the general population.

Specifically, veterans may seek clinical care from providers who are not privy to medical records and/or provide complementary or alternative care approaches. Because such clinicians rely solely on care recipients to self-report PTSD and those with PTSD have low disclosure rates, clinicians in complementary medicine fields, such as massage therapy, will likely treat many with PTSD without knowing it. General clinical practice strategies that allow for control negotiation during treatment sessions regarding environment aspects may be beneficial for those with disclosed or nondisclosed PTSD.

A therapeutic encounter between a massage practitioner (MR) and a veteran seeking care to improve their rehabilitation experience from a combat injury provide the basis of an informative case report in which the subject had PTSD but did not disclose their diagnosis until two years after the reported treatment. This case report examines the use of massage therapy to improve a veteran combat injury rehabilitation and recovery experience through purposive, retrospective, and comprehensive Subjective, Objective, Assessment and Plan (SOAP) note review. By utilizing the CARE (CAsE REport) guidelines “to satisfy the need for precision, completeness, and transparency”⁽¹⁴⁾ of case reports as adapted for therapeutic massage and bodywork (TMB),⁽¹⁵⁾ this report provides a template for individual massage therapists to present case reports from existing SOAP notes.

METHODS

This case report’s subject provided consent for the writing and dissemination of this work as per CARE⁽¹⁴⁾ and the

TMB-adapted CARE guidelines.⁽¹⁵⁾ The presented case report treatments occurred between February and April 2013, and retrospective analysis, poster development, and presentation⁽¹⁶⁾ and manuscript writing occurred from August to December 2019. This case report’s subject continues to receive periodic therapeutic massage sessions from the primary author.

Case Presentation

A 31-year-old White male received seven, 60-min, full-body massages for complications of a combat-related shoulder injury incurred approximately six years before presentation. The right shoulder sustained a broken humeral head and complete dislocation during a defensive maneuver in a life-threatening attack. Surgical repair was completed about one month after removal from combat zone, three months postinjury. Standard postsurgical care and physical therapy were reported as given and resulted in moderate right arm function compared to preinjury ability. The subject reported decreased strength and range of motion (ROM), reducing their ability to participate in previously enjoyed activities, which increased their stress and decreased overall outlook on life.

Relevant Pretreatment Procedures and Observations

Intake documentation listed all physical injuries and continued care through the Veterans Administration (VA). No prescribed medications or preexisting health issues were listed. The subject communicated a lifetime, high physical activity level akin to a competitive athlete, and was comfortable with standard treatments utilized by athletic trainers, physical therapists, and health-care professionals. Initial intake, assessment, and interview were completed outside the treatment room. The subject turned on overhead lights and asked for the door to be left open during final pretreatment, routine massage protocol items in the private treatment room. Music choice and audio device explanations were given before the therapist left the room, shut the door, and prepared for treatment.

Assessment Measures

This case report utilized data from three different assessments: goniometric

measurements, documented observation, and subject self-report.

Goniometric measurements

Goniometric measurements using a basic transparent plastic goniometer for the right shoulder were collected and documented before treatments in Week 1, Week 6, and Week 8, and after Week 8. Active and passive range of motion (ROM) was measured for right shoulder flexion, extension, abduction, adduction, internal rotation, and external rotation. Week 1 before treatment measures and Week 8 after treatment measures were used to calculate the pre- and posttreatment total percentage of change with the equation:

$$\frac{\text{Before treatment week 1-After week 8 treatment}}{\text{Before treatment 1}} \times 100 = \text{total percent change.}$$

Observation and documentation

Environmental comfort behaviors were observed and documented in the treatment notes for control of music choice, room lighting, and door positioning (open or closed) during pretreatment, treatment, and posttreatment activities, in addition to when control was transferred from subject to therapist.

Self-report

Subject identified treatment goals of increasing ROM and chronic pain reduction specific to the injury and return to preinjury activities. Self-report was completed through conversation as part of pretreatment discussion with each treatment.

Therapeutic Intervention

Therapeutic intervention was provided by the first author, a Missouri-licensed massage therapist (LMT) holding Board Certification through the National Certification Board of Therapeutic Massage and Bodywork. At the time of this case's treatment application, the therapist was employed as an LMT in a salon setting, and was a recent graduate of a 900-hr massage training program focusing on trigger point therapy through Precision Neuromuscular Therapy (Champaign, IL) curriculum.

Six weekly, full-bodied, 60-min massages were completed sequentially. A follow-up 60-min treatment was completed at Week 8. Injury treatment included focused trigger point therapy, myofascial release, and

proprioceptive neuromuscular facilitation to the neck, shoulder, and chest. A treatment timeline is diagrammed in Figure 1. Each treatment session began supine, focusing on superficial aspects of the neck and head. Treatment of the injury followed alternating affected and nonaffected sides, beginning with upper then lower extremities. Lower extremities and glutes were addressed in prone position with alternating affected and nonaffected side progression of the back and shoulders. The massage was completed using bilateral effleurage to the back, with increasing surface contact, lateral to the spine.

RESULTS

Deficits in ROM were assessed when compared to full ROM measurements. Measurements for a healthy shoulder vary considerably in literature, with top-end ranges at 180° flexion, 60° extension, 180° abduction, 60° adduction, 70° internal rotation, and 90° external rotation. Experimental comfort behaviors were compared to typical massage treatment behaviors in a relaxed ambient environment with calm music, low lighting, closed door, and uninterrupted treatment. Subject self-reported outcomes were delineated as the primary motivations for seeking treatment.

Active and Passive Shoulder ROM

Table 1 displays all pertinent ROM measures for this case, including full shoulder ROM measures, measures taken before treatment at Week 1, Week 6, and Week 8, posttreatment at Week 8, and the total ROM percentage change from pretreatment Week 1 and posttreatment Week 8. Based on Week 1 pretreatment measurements, the shoulder injury reduced the subject's active ROM in flexion (~11%), extension (~67%), abduction (~44%), adduction (~75%), internal rotation (~36%), and external rotation (~22%). Additionally, the shoulder injury reduced the subject's passive ROM in flexion (~39%), extension



FIGURE 1. Treatment timeline in weeks.

TABLE 1. All Shoulder ROM Measures and Total Percent Shoulder ROM Change

<i>Shoulder Range of Motion</i>						
<i>Active</i>	<i>Full</i>	<i>Before</i>			<i>After</i>	<i>Total % Change</i>
		<i>Week 1</i>	<i>Week 6</i>	<i>Week 8</i>	<i>Week 8</i>	
Flexion	180	160	160	170	180	12.5
Extension	60	20	40	50	50	150
Abduction	180	100	130	130	140	40
Adduction	60	15	30	35	40	167
Internal Rotation	70	45	55	70	80	14.3
External Rotation	90	70	65	70	70	0

<i>Passive</i>	<i>Full</i>	<i>Before</i>			<i>After</i>	<i>Total % Change</i>
		<i>Week 1</i>	<i>Week 6</i>	<i>Week 8</i>	<i>Week 8</i>	
Flexion	180	110	150	140	180	63.6
Extension	60	10	25	30	45	350
Abduction	180	90	140	140	150	66.7
Adduction	60	0	30	30	45	450
Internal Rotation	70	30	55	70	70	133
External Rotation	90	45	70	70	80	77.8

(~83%), abduction (~50%), adduction (~100%), internal rotation (~57%), and external rotation (~50%). Baseline passive ROM measures were notably less than the same motions measured as active ROM.

All ROM measures, except active external rotation, improved from baseline to post-Week 8. While ROM improvements ranged from 12.5% to 450%, passive ROM measures had consistently pronounced improvements, with median improvement at 95% and ranged from 64% to 450%. Generally, active and passive ROM measurements became more consistent with each other as treatments progressed. The subject's shoulder reached full ROM by treatment end for active and passive flexion, active internal rotation, and passive internal rotation, and neared full ROM measurement (within 25%) for active extension and external rotation, passive extension, abduction, adduction, and external rotation.

Environmental Comfort Behaviors

Table 2 displays the four observed and documented comfort behaviors (music choice, open door, room lighting, and

breaks during treatment) at each treatment and who controlled each during the session. The subject retained control and exercised music choice during the treatment period. Control of, or necessity for, the remaining comfort behaviors all shifted to the practitioner at different points in the treatment period, allowing the practitioner to close the door during treatments by the third session and adjust the lights by the fifth treatment. The subject was able to receive the 1-hr session uninterrupted by Week 6.

A descriptive inverse relationship is found between shoulder ROM (Table 1) and controlling environment comfort behaviors (Table 2). Reduced active and passive ROM measurements obtained before treatment corresponded to a high level of environmental comfort behaviors. This relationship flipped through treatment, creating a descriptive inverse relationship with improved active and passive ROM and decreased environment comfort behaviors.

Subject Self-Reported Outcomes

Subject identified meaningful self-report goals for the treatment period

TABLE 2. Environmental Comfort Behaviors Control Transition

<i>Environment Comfort Measures</i>							
	<i>Week 1</i>	<i>Week 2</i>	<i>Week 3</i>	<i>Week 4</i>	<i>Week 5</i>	<i>Week 6</i>	<i>Week 8</i>
Music Choice	c	c	c	c	c	c	c
Open Door	c	c/p	p	p	p	p	p
Room Lighting	c	c	c	c/p	p	p	p
Break in Tx	y	y	y	y	y	n	n

c = client control

p = practitioner control

c/p = transition from c to p

were increased ROM for the injured limb, reduced chronic pain of the injured limb, and increased physical activity level in previously enjoyed activities. At Week 6, the subject reported personally observed ROM improvements during physical activity with decreased (a) movement induced pain, (b) chronic pain specific to the injured limb, and (c) outside physical activity-induced soreness, in addition to increased physical activity levels including structured community events. By Week 8, the subject reported playing longer with their children and helping them work on sport-specific skills with minimal discomfort.

DISCUSSION

Published case reports are a fundamental, evidence-based medium through which health practitioners can share best and effective practices with other health practitioners and professions, as well as provide an excellent educational tool.⁽¹⁷⁾ Session or treatment documentation provided in SOAP notes serve as an indication of treatment efficacy, clinical decision-making, and treatment plan completion across many health-care professionals.⁽¹⁸⁾ Massage therapists have existing SOAP notes from current and past clients that may serve as an additional resource in future treatment protocols for special populations or provide insight into identifiable behaviors for appropriate referral resources. This case report is the first instance of a purposive, retrospective, and comprehensive SOAP note review used to describe the massage treatment outcomes of a veteran with undisclosed PTSD receiving care for combat injury rehabilitation and recovery experience. While routine care and surgery

had recovered functional movement to the injured limb, meaningful improvement in subject identified outcomes was enhanced with six weekly, 1-hr massage sessions, and a two-week follow-up session. Veteran identified goals of increased ROM, reduced chronic pain of the injured limb, and increased activity in previously enjoyed physical activities were achieved. The use of massage therapy as a physical and affective treatment strategy are discussed considering documented barriers to care for veterans in pain, the stigma of a mental health diagnosis, and symptoms of PTSD.

Improvements in ROM for this case subject can be compared to prior research investigating massage therapy for ROM. Table 3 displays literature-reported massage therapy improvement to shoulder ROM for all movements and short- and long-term pain with large effects sizes for flexion, abduction,⁽¹⁹⁾ and short-term pain.⁽²⁰⁾ Goniometric measurements of supine, painful shoulder ROM show fair to excellent intrarater reliability with standard errors of measure between 4.39° in extension to 8.81° in adduction⁽²¹⁾ and minimally detectable changes at 6°–8°.⁽²²⁾ All ROM measures showed changes larger than established minimally detectable change thresholds, except for the active external rotation measure. While active flexion was consistent with reported effect sizes shown in Table 3, changes to passive flexion (70°), active and passive extension (30°/35°), active and passive abduction (30°/60°), and active and passive internal rotation (35°/40°) are considerably larger.⁽¹⁹⁾ It is reasonable to attribute the physical response of increased active and passive ROM and reduced pain to hands-on application of the treatment provided.

TABLE 3. Shoulder ROM Effect Size Attributed to Massage Therapy Treatment (Yeun⁽¹⁹⁾)

<i>Massage Range of Motion Effect Size</i>	
<i>Movement</i>	<i>Effect Size</i>
Flexion	18.21
Extension	6.29
Abduction	22.07
Internal Rotation	10.10
External Rotation	9.54

Differences between active and passive ROM in dominant and nondominant limbs have been documented in healthy, highly active shoulders.⁽²³⁾ Across male military cadet measures described, passive ROM is greater than active ROM, with slightly greater mobility in the dominant shoulder attributed to increased participation of sports.⁽²³⁾ Significant active and passive ROM discrepancies in this case call to attention muscle tension possibly increased by the anticipation of pain or further injury, known as a conditioned behavioral response called guarding.⁽²⁴⁾ Guarding appears more related to anxiety than pain,⁽²⁵⁾ and this case may point to a fear-avoidance cycle in the pain experience where anxiety and reduced confidence in movement are mediators.⁽²⁶⁾

Guarding after an injury is somewhat expected, but fear, avoidance, hypervigilance, and negative thoughts and feelings are ongoing issues in PTSD. Subject reports of “I knew I could leave at any time,” and “I needed to know I could get out. I didn’t want to be confined. My brain works knowing I have an exit strategy without resistance,” may explain initial environmental comfort behaviors. These statements could be interpreted as an anticipated need to fight or flee, or the ability to respond when signaled as occupationally trained. Massage treatment affective effects⁽²⁵⁾ might explain the inverse relationship between ROM measures and environmental comfort behaviors, larger than anticipated effects for multiple ROM measures in a short treatment window, and reduction of pain.

The case subject’s PTSD was not disclosed at initial intake and underscores a documented preference for anonymity to mitigate stigma in veterans with PTSD.⁽²⁷⁾ This subject disclosed the PTSD diagnosis

two years after initial treatment reported here, in response to consecutive missed appointments without communication and a lapse in seeking treatment after an unrelated injury. When asked about nondisclosure, the subject stated, “It isn’t something you just tell people. For the most part, you just live with it. Most people don’t understand.” Those statements validly represent veterans’ experiences with PTSD in that various types of stigma create an environment to hide mental health struggles. While not specific to those with PTSD, avoidance behaviors may highlight the complex variables that create a barrier to—or interfere with—appropriate care-seeking and therapeutic relationships required for recovery, while also increasing physical and mental function issues.

Inclusion of psychology topics such as learning, behavior, and motivation within massage practitioner dialogue and education is paramount to effective treatment planning for clients managing trauma effects. Awareness of these issues is particularly needed among those who work with veterans because core symptoms of PTSD can exacerbate typical responses, increase nondisclosure likelihood, and create barriers to treatment commitment or response less recognized in civilian care settings. Inconsistent foundation massage education in the United States⁽²⁸⁾ limits the systematic inclusion of such essential topics in clinicians’ early training, potentially leaving massage professionals ill-prepared to meet the growing needs of consumers regarding trauma and/or PTSD. While this case experience came early in the first author’s massage practice, skills cultivated through previous work experiences in physical training, health promotion, and behavioral therapy in special populations, as well as an undergraduate education, allowed for a documented appropriate response mixed with nonthreatening flexibility sensitive to the subject’s needs in the moment.

Limitations

While a meaningful aspect of foundational practice reflective research, case reports are deemed the “weakest” level of evidence on commonly referred to evidence pyramids.⁽²⁹⁾ Case reports document a single practice experience from a clinician. They have inherent limitations, including those related to how results should be interpreted and generalized.

Also, the documented measures in this retrospective case report are limited to what was completed at the time and may not reflect a gold standard research approach to assessment and outcomes collection.

Specific to this case, pain was identified by the patient as a reason for seeking treatment. Consistent pain level communication outside of narrative explanation was challenged during the patient's course of treatment, with pain level solicitation responses including statements such as, "I don't know how to answer that right now," or "it feels better." The systematic inclusion of a validated self-report pain scale would potentially have provided additional information, but was not included at the time. Clinical practices incorporating such measures within their usual practice would enrich their clinical notes for retrospective review. Additional physical and affective measures requiring a collaborative team of health-care professionals are needed to evaluate if and how massage treatment impacts PTSD symptoms.

Future Directions

The prevalence of PTSD in returning veterans is relatively high,⁽⁸⁾ and veterans have been utilizing massage services as a complement to allopathic care outside the VA.⁽⁷⁾ Unique veteran needs awareness and education, in addition to symptoms and behaviors associated with trauma, are essential for massage therapists to create trauma-informed plans and appropriately function as part of civilian multidisciplinary and veteran interdisciplinary teams. Comprehensive inclusion of trauma-informed clinical decision-making with corresponding SOAP note documentation is needed in foundation massage education standards. However, massage therapists may have documentation of changes to treatment and care as accommodations for symptoms of trauma or other health issues previously unidentified. Retrospective, comprehensive review of those SOAP notes reported by TMB-adapted CARE guidelines can add to the literature for a collective review of massage used in these populations and for improved treatment planning.

CONCLUSION

This retrospective case report documents methods and modifications of

care through a series of seven full-body massages used in the treatment plan for a veteran combat-related shoulder injury. While this case's subject did not disclose PTSD until two years following the reported treatment, evidence of its impact on rehabilitation experience was notable. These results identify meaningful, functional and affective outcomes this veteran received through massage treatment. Increases in active and passive ROM met established criteria for minimally detectable change for shoulder injuries due to massage treatment, with some movements exceeding documented minimally detectable changes and effect sizes. The veteran met self-reported treatment goals of increased ROM, physical activity, and participation in previously enjoyed activities. Specific knowledge concerning the veteran population and PTSD is necessary for massage therapists to participate effectively on multi- and interdisciplinary health-care teams through trauma-informed treatment planning. Comprehensive, retrospective SOAP note reviews are beneficial for future case management to support veterans and trauma survivors' appropriate treatment decisions in the future.

CONFLICT OF INTEREST NOTIFICATION

The authors declare there are no conflicts of interest.

COPYRIGHT

Published under the [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 License](https://creativecommons.org/licenses/by-nc-nd/3.0/).

REFERENCES

1. Nelson NL, Churilla JR. Massage therapy for pain and function in patients with arthritis: a systematic review of randomized controlled trials. *Am J Phys Med Rehabil*. 2017;96(9):665–672.
2. da Silva TA, Schujmann DS, da Silveira LT, Caromano FA, Fu C. Effect of therapeutic Swedish massage on anxiety level and vital signs of Intensive Care Unit patients. *J Bodywork Move Ther*. 2017;21(3):565–568.
3. Price CJ. Dissociation reduction in body therapy during sexual abuse recovery. *Complement Ther Clin Prac*. 2007;13(2):116–128.

4. Milligan-Saville JS, Paterson HM, Harkness EL, Marsh AM, Dobson M, Kemp RI, et al. The amplification of common somatic symptoms by post-traumatic stress disorder in firefighters. *J Trauma Stress*. 2017;30(2):142–148.
5. Defrin R, Schreiber S, Ginzburg K. Paradoxical pain perception in posttraumatic stress disorder: the unique role of anxiety and dissociation. *J Pain*. 2015;16(10):961–970.
6. Shaylin J, Shind C, Radell M, Ebanks-Williams Y, Gilbertson M, Beck K, et al. Greater avoidance behavior in individuals with posttraumatic stress disorder symptoms. *Stress*. 2017;20(3):285–293.
7. Krejci L, Carter K, Gaudet T. Whole health: the vision and implementation of personalized, proactive, patient-driven health care for veterans. *Med Care*. 2014;52(12 Suppl 5): S5–S8.
8. Park CL, Finkelstein-Fox L, Barnes DM, Mazure CM, Hoff R. CAM use in recently returned OEF/OIF/OND US veterans: demographic and psychosocial predictors. *Complement Ther Med*. 2016;28:50–56.
9. Libby D, Pilver, CE, Desai R. Complementary and alternative medicine use among individuals with posttraumatic stress disorder. *Psychologic Trauma: Theory Res Pract Pol*. 2013;5(3):277–285.
10. Gaudet G, Sowers K, Nugent W, Boriskin J. A review of PTSD and shame in military veterans. *J Hum Behav Soc Environ*. 2016;26(1):56–68.
11. Schreiber M, McEnany GP. Stigma, American military personnel and mental health care: challenges from Iraq and Afghanistan. *J Mental Health*. 2015;24(1):54–59.
12. Ghahramanlou-Holloway M, Koss K, Rowan A, LaCroix J, Perera K, Carreno J, et al. Retrospective and prospective examination of outpatient mental health utilization and military career impacts. *Stigma Health*. 2019;4(2):143–151.
13. Andresen F, Blais R. Higher self-stigma is related to lower likelihood of disclosing military sexual trauma during screening in female veterans. *Psychologic Trauma: Theory Res Pract Pol*. 2019;11(4):372–378.
14. Gagnier J, Kienle G, Altman D, Moher D, Sox H, Riley D. The CARE guidelines: consensus-based clinical case reporting guideline development. *J Med Case Rep*. 2013;7(1):223.
15. Munk N, Boulanger K. Adaptation of the CARE Guidelines for therapeutic massage and bodywork publications: efforts to improve the impact of case reports. *Int J Ther Massage Bodywork*. 2014;7(3):32–40.
16. Rosenow M, Munk N. Massage for combat injuries in veteran with PTSD: a retrospective case report [poster abstract]. *Int J Ther Massage Bodywork*. 2020;13(2):21–22.
17. Green BN, Johnson CD. How to write a case report for publication. *J Chiropr Med*. 2006;5(2):72–82.
18. Gossman W, Lew V, Chassemzadeh S. SOAP Notes [Internet]. Treasure Island, FL: StatPearls Publishing; 2020. Updated 2019 Jul 11. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK482263/>
19. Yeun YR. Effectiveness of massage therapy on the range of motion of the shoulder: a systematic review and meta-analysis. *J Phys Ther Sci*. 2017;29(2):365–369.
20. Yeun YR. Effectiveness of massage therapy for shoulder pain: a systematic review and meta-analysis. *J Phys Ther Sci*. 2017;29(5):936–940.
21. Fieseler G, Laudner KG, Irlenbusch L, Meyer H, Schulze S, Delank KS, et al. Inter- and intrarater reliability of goniometry and handheld dynamometry for patients with subacromial impingement syndrome. *J Exerc Rehabil*. 2017;13(6):704–710.
22. Kolber MJ, Hanney WJ. The reliability, minimal detectable change and construct validity of a clinical measurement for identifying posterior shoulder tightness. *N Am J Sports Phys Ther*. 2010;5(4):208–219.
23. Vairo GL, Duffey ML, Owens BD, Cameron KL. Clinical descriptive measures of shoulder range of motion for a healthy, young and physically active cohort. *Sports Med Arthrosc Rehabil Ther Technol*. 2012;4(1):33–33.
24. Prkachin KM, Schultz IZ, Hughes E. Pain behavior and the development of pain-related disability: the importance of guarding. *Clin J Pain*. 2007;23(3):270–277.
25. Olugbade T, Bianchi-Berthouze N, Williams AC. The relationship between guarding, pain, and emotion. *Pain Rep*. 2019;4(4):e770.
26. Hunt E, Baez S, Olson A, Butterfield T, Dupont-Versteegden E. Using massage to combat fear-avoidance and the pain tension cycle. *Int J Athl Ther Train*. 2019;24(5):198–201.
27. Cheney A, Koenig C, Miller CJ, Zamora K, Wright P, Stanley R, et al. Veteran-centered barriers to VA mental healthcare services use. *BMC Health Serv Res*. 2018;18(1):591.
28. Menard MB. Choose wisely: the quality of massage education in the United States. *Int J Ther Massage Bodywork*. 2014;7(3):7–24.
29. Burns PB, Rohrich RJ, Chung KC. The levels of evidence and their role in evidence-based medicine. *Plast Reconstr Surg*. 2011;128(1):305–310.

Corresponding author: Mica Rosenow, MS, LMT BCTMB, Indiana University School of Health & Human Sciences—IUPUI, 1050 Wishard Blvd. #3031, Indianapolis, IN, 46202 USA
E-mail: mrosenow@iu.edu