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Treating Individuals with Amputations in Therapeutic Massage and Bodywork Practice: A Qualitative Study

RUNNING HEAD: Treating Individuals with Amputations in TMB Practice

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Highlights

- The experiences and perspectives of massage therapists who have worked with amputation clients were examined.
- Participating massage therapists strongly believed their amputation clients benefitted from massage.
- Results will inform stakeholders interested in the health of individuals with amputation(s) of the benefits massage can provide.

Abstract

Introduction: Best practices for massage therapy and bodywork (TMB) treatment of individuals with amputations are not well established. Although anecdotal observations are available, they have limited applicability for informing effective massage therapy and bodywork approaches for individuals with amputations. This study is part of a multifaceted research program seeking to establish a foundation for education and investigation of TMB for amputation related conditions/symptomology. The purpose of this study was to understand how TMB practitioners approach and treat individuals with amputations and their perceptions of outcomes. The TMB practitioner perspective is important in informing the development of a TMB practice framework for people with amputation

Methods: The methodology of this study was informed by the phenomenological approach to qualitative inquiry. Semi-structured telephone interviews were conducted between June and September 2015, recorded and transcribed. Analysis consisted of descriptive coding and themes emerged through an iterative process. Codes and themes were discussed and verified with the research team. Participants were invited to review developed themes to indicate the extent to which results accurately encompassed their experiences as TMB practitioners.

Results: Twenty-five community practicing, professional TMB practitioners from 16 states consented to participate and all completed one interview. Analysis identified four themes which indicated TMB practitioners: value touch and consider it a core aspect of treatment for individuals with amputations; operate under a core belief that individuals with amputations greatly benefit from TMB; and consider relief that stems from TMB to be multidimensional, including physical, mental, and emotional aspects; and, certain components of treatment approach are unique to amputation clients.

Conclusions: Findings support that individuals with amputation benefit from TMB, at least from the perspective of TMB practitioners. Findings of this exploratory research identify important questions regarding approaches to treatment and potential TMB effectiveness hypotheses for amputation populations. Next steps will consider TMB approach and effects from the perspective of those with amputation(s).

Abbreviations

TMB, therapeutic massage and bodywork; VA ASoC, Veteran's Administration Amputation System of Care; REDCap, Research Electronic Data Capture; VAS, visual analog scale

Keywords

practitioner perspectives; massage therapists; interviews

Introduction

Over 1.5 million people live with an amputation in the United States, with this rate projected to more than double by 2050.⁽¹⁾ Individuals living with amputation(s) face many chronic or reoccurring conditions and/or symptoms such as residual limb pain, functional impairment, and phantom limb pain.⁽²⁻⁴⁾ Treatment options for amputation related pains are primarily pharmacological; not optimal due to associated side-effects making such treatment increasingly unpopular for many patients and providers.⁽⁴⁾ For example, the current pharmacological approaches for phantom limb pain are mainly opioid and anticonvulsant drugs⁽³⁾ which demonstrate only modest effects with many patients reporting they do not receive satisfactory pain relief through their treatment regime.⁽⁴⁻⁶⁾ Patients and providers are increasingly seeking non-pharmacological approaches to treat and manage amputation related pain. As such, development of non-pharmacological therapeutic approaches to address amputation related pain^{(2),(3),(6-8)} and other related sequelae is important and a priority for organizations such as the Veteran's Administration Amputation System of Care⁽⁹⁾ and pain advocates.⁽¹⁰⁾

Therapeutic massage and bodywork (TMB) is self-reported by those with amputation as moderately to extremely effective,⁽⁶⁾ but no research to date has been specifically designed to examine its efficacy or effectiveness. No established TMB treatment approaches, guidelines or best practice for individuals with amputations is evident in the literature. Anecdotal observational information and case specific examples for TMB in regards to individuals with amputation are available in trade periodicals and provide important insight as to the occurrence of such practice.^(11, 12) However, these are of limited use to most amputation stakeholders wishing to seek, identify, or research effective care for amputation related conditions and symptomology due to resource accessibility or perceived threats to source reliability or credibility.⁽¹³⁾ Evidence informed practice is built from clinical experience, patient preferences, and the best research evidence available.⁽¹⁴⁾ Although a recent TMB case report featured beneficial treatment for a foot amputee's low back pain⁽¹⁵⁾ and two studies specifically feature TMB use related to

mastectomy,^(16, 17) no specific research literature was identified regarding use of TMB specifically for limb amputation pain and related issues.

The current study's purpose was to begin addressing the identified literature gap and explore current approaches in TMB practice addressing amputation related sequelae and the potential effect or benefit of such treatments. The following research questions were addressed:

- What amputation related sequelae do TMB practitioners address in their practices?
- How and why do TMB practitioners approach and treat amputation related sequelae?
- What kind of results do practitioners perceive their amputation clients to have from the TMB treatments and to what do they attribute the results?

Methods

The methodology for this qualitative study was informed by phenomenological research design which allows for an in-depth understanding of phenomena, or experienced reality (e.g., event or situation).⁽¹⁸⁾ For this study, the examined phenomenon is the experience professional TMB practitioners have providing massage to amputation clients. Interviews were conducted with participants to gather information regarding their experience providing massage to amputation clients. Data gathered in these interviews provides several thematic descriptions of the shared, lived experiences of these TMB practitioners.⁽¹⁹⁾ All study activity was reviewed and approved by the Indiana University (IU) Office of Research Compliance (protocol #1505574988). Recruitment and data collection took place from June to September 2015.

Participants

People were eligible to participate in the study if they were professional TMB practitioners who were 1) community practicing, 2) had provided at least one treatment for an individual with at least one amputation, and 3) practice in either Canada or the United States. For the purposes of this study, professional TMB practitioners were defined as those who are practicing massage therapy combined or not with other bodywork techniques or modalities who self-report compliance with recognized and organizational professional standards (e.g., AMTA, AMBP, NCBTMB) and are in good standing with local, state/province, national regulating bodies for licensure, certification, registration, or

otherwise, according to their residence. For the purposes of this study, practitioner was broadly defined in an effort to reflect the diverse, un-standardized, and inconsistent credentialing and definitions for therapeutic massage professionals.

Recruitment

TMB practitioners were informed about the study via digital fliers distributed by social media (i.e., Facebook), Massage Therapy Foundation networking mechanisms and other convenience/snowball sampling strategies.⁽²⁰⁾ Potential participants were asked to contact the researchers via office phone or email and initially, all who inquired and met inclusion criteria were enrolled. When inquiries became robust, the recruitment approach was modified in order to generate a diverse sample that would capture a broad range of experiences. The researchers purposively enrolled participants based on geographic location, gender, time in practice, and amount of amputation related therapeutic work experience. All interested individuals were from the United States and first categorized by geographic location region: West, Midwest, South, or Northeast. Within each region, purposive sampling aimed to match each individual with an “opposite” within that region based on gender, time in practice, and experience with amputation clients (i.e., matching a male with extensive experience of working with amputation clients with a male individual with relatively little to no experience) to get as diverse sample as possible from those who expressed interest. This type of purposive sampling sought to ensure a range of viewpoints and perspectives from those completing the online survey. Those interviewed received an electronic \$20 Amazon gift card honorarium.

Data Collection

Semi-structured in-depth interviews were used to explore the perceptions and experiences of massage therapists who have worked with amputation clients. In order to refine interview questions and procedures¹⁸ as well as timing and understandability, the interview guide (Appendix A) underwent peer debriefing⁽²¹⁾ with a massage therapy practitioner and research professionals familiar with amputation related sequelae in a clinical setting. Study participants completed one semi-structured individual telephone interview. All interviews were conducted by one of the study’s principle investigators (SS). Each interview was recorded with a secured audio recording device and transcribed verbatim by SS (first 10) and a professional transcriptionist for the remainder for expediency to facilitate data analysis. SS randomly checked five of the professional transcripts for accuracy.

Data Analysis

Analysis began with multiple readings of each transcript to gain awareness and general understanding of participant perceptions and experiences. While transcriptions were read, notes and general comments were made to recognize and filter researcher's judgments or interpretations and to initiate coding. Study co-PIs (SS and NM) led coding and thematic development, with regular input and feedback from the other research team members (AKR and TS) throughout the process. Study co-PIs coded the first four interviews separately to establish inter-rater comparability. This process was repeated for the next four transcripts. Once coding agreements were reached, a framework was developed, reviewed by all, and applied to code the remaining transcripts (completed by SS).

Inductive data coding and analysis were applied.⁽¹⁸⁾ Significant statements that provided a better understanding of how participants experienced the phenomenon were highlighted and used to develop clusters of meaning that eventually developed into themes. Developed themes provide a composite description that presents the phenomenon's essence of TMB for amputation clients.⁽¹⁸⁾ To organize transcripts, aid with code development, and identify patterns among coded segments, the software package MAXQDA was used.⁽²²⁾

Member Checking

Participants were invited to review developed themes to determine the extent to which results accurately encompassed their experiences and identify any missing elements, supporting credibility of the reported findings.⁽¹⁸⁾ During the weeklong member checking process, participants were emailed a link to a REDCap survey that provided theme titles with descriptive bullet points. REDCap is a secure, web-based application designed to support data capture for research studies, providing: an intuitive interface for data entry; audit trails for tracking data manipulation and export; and automated export procedures.⁽²³⁾ Participants were asked to indicate their level of agreement on a visual analog scale (VAS) for each theme. Each theme's VAS slider was initially set in the middle of the continuum for sliding left or right to indicate their level of agreement (right) or disagreement (left). Participants were given an opportunity to leave general comments and feedback regarding the drafted results.

Results

Over 105 TMB practitioners self-identified as interested in study participation, 29 were invited to enroll, and 25 practitioners from 16 states completed an interview. Table 1 outlines participant characteristics, which are

comparable to massage practitioners across the United States in terms of age and practice setting.⁽²⁴⁾ The sample varied in terms of gender and overall experience; this study's sample had a higher percentage of males and overall experience of the sample was higher.⁽²⁵⁾ Participants reported a wide range of foundation massage education training (i.e., 72-2800 hour programs from various institutes and proprietary schools from known and unknown accreditation statuses) and the completion of continuing education hours to maintain their credentials in classes of various topics focused on techniques (e.g., cranialsacral therapy, myofascial release, Rolfing), business, and ethics, and offered through various venues including professional organizations, conventions, meetings, online courses, and massage institutes and schools. A single participant indicated specialized training for the amputation population but the training was specific to nurses and physical therapists.

Emergent Themes

Analysis identified four themes which indicated TMB practitioners: value touch and consider it a core aspect of treatment for individuals with amputations; operate under a core belief that individuals with amputations greatly benefit from TMB; and consider relief that stems from TMB to be multidimensional, including physical, mental, and emotional aspects; and, certain components of treatment approach are unique to amputation clients.

Value of Touch

For participants, touch was considered an integral part of a TMB treatment, regardless of whether or not the client had an amputation. For some participants, touch was closely associated with healing or the healing process, as discussed by P24:

[I] just believe in the fact that touch heals. It doesn't matter how much touch or what touch, just the idea that if we reach out and touch somebody, whether they've had an amputation or just have an emotional stress on themselves, that touch is just a healing property.

Practitioners viewed touch as a positive and highly valuable aspect of treatment for amputation clients because it allowed for emotional release. For example, practitioners discussed how some clients indicated they were not touched, or did not want to be touched, at all or as often after surgery. Practitioners perceived that, as a result, some clients experienced an emotional response resulting from the direct contact during treatment. This is reflected in one participant's experience:

I would have to say I've had several clients tell me, "Since the amputation, people don't touch me as much. I didn't realize that you touching me was going to affect me emotionally." She was just in tears because she'd never had that many people touch her since the injury. -P18

Touch was integral to establishing the context of a TMB treatment. There was a sense of respect on the practitioners' parts, which recognized the level of client comfort facilitated through touch or direct contact. Practitioners discussed how they respected the fact that clients allowed them to be in such close proximity. There was also a sense of appreciation associated with touch, as it provided practitioners an opportunity to learn from the body presented to them in the moment. When working with an amputation client for the first time, many practitioners reported that learning through experiential touch allowed them the opportunity to better and more confidently work with future clients.

Individuals Benefit from TMB

Practitioners reported a variety of perceived general health benefits experienced by all clients including less pain, improved mood, improved energy, being more relaxed, and decreased use of medications. While practitioners felt amputation clients experienced the same general benefits, there were additional benefits identified specifically to amputation-related complaints such as relief from phantom limb pain symptoms, increased prosthesis comfort, and less restriction in movement of the residual stump and stump tissue. These are all highly relevant, as reflected in the following quote from P28: "... and she had called a few weeks after her treatment and was just about in tears because she said that that was the first time that her phantom limb pain had been gone".

Along with the physical health benefits that practitioners discussed, there were perceived improvements in mood and energy, as well as self and body awareness from treatments. Improved awareness appeared to be a byproduct benefit of TMB treatment and may have had a unique meaning among amputation clients; for these individuals there was a missing limb and yet their mind still accounted for that limb. Practitioners considered it highly important to support clients' understanding of the pain being experienced in the missing limb and how to work through it, which requires a heightened sense of body awareness on the part of the client. Given this, practitioners viewed improving body awareness and education with their amputation clients as a necessary component of TMB treatment.

...the awareness that was created about themselves and their body and the reduction of their depression and anxiety really did help them function better... -P4

A few practitioners had Paralympic athletes as clients who sought out TMB for performance-based improvements. Their health benefits were conceptualized in terms of how TMB treatment helped them prepare for or recover from competition.

Relief is Multidimensional

Relief in any capacity could be considered a health benefit. Though benefit was examined in the prior theme, the multidimensional relief theme stands on its own due to the frequency practitioners spoke specifically about the concept of relief and what relief in treatments entailed. The researchers felt it important not to lose the emphasis of relief discussed by practitioners during the data's interpretation particularly because, while relief is beneficial, not all health benefits are relief related. With these considerations in mind, relief was established a standalone theme.

Practitioners indicated that in addition to physical relief from movement restriction, pain, and phantom limb sensation, relief also presented in terms of mental, emotional and physical wellbeing. Mental and emotional relief may have included feeling unburdened during treatment and/or experiencing emotional releases such as crying, anger, and personal acceptance. Practitioners expressed belief that amputation clients were holding onto the stress and trauma of their surgery or the situation that resulted in having to undergo an amputation. As a result, practitioners associated relief experienced by an amputation client with a sense of comfort in knowing someone cared for them and their situation.

...she didn't you know, she didn't have a lot of physical pain that she shared with me, with her amputation, but uhm, she did you know, she had pain relief from the rest of the massage on the rest of her body, her neck and her chest, her...I did watch her mood progress. Like I said, for her uhm, it was really a lot of her mental traumatic stress was lifted by the massage. -P6

Certain Components of Treatment Approach are Unique to Amputation Clients

Overall, practitioners indicated they approached amputation clients in a manner similar to other clients. General approaches practitioners mentioned, regardless of whether or not the client had an amputation, included: making

sure the client clearly articulated why they sought out TMB treatments, what they hoped to accomplish in treatment sessions, and ensuring agreement and clarity between themselves and their clients. This approach is highlighted by P11: *“Obviously, I have to ask different questions, and understand their particular needs, and be specific about asking questions about the amputation, but other than that, everything's the same”*.

Practitioners spoke of techniques such as myofascial release, effleurage, Swedish, and trigger point. While use of these techniques was not described as exclusive for amputation clients, the way in which techniques were applied made it amputation specific. For instance, practitioners considered the application of any of the mentioned techniques on a residual limb to be a unique use of application.

Related to the theme focused on touch, one aspect of treatment unique for amputation clients was when practitioners engaged in energy work around the missing limb. Through the member checking feedback, a few practitioners clarified that the concept of energy work was not considered specific for or unique to amputation clients; rather, the manner in which it was applied was seen as a unique method of treatment for amputation clients. Practitioners indicated challenges to providing impactful energy work over removed or missing body areas because there was not anything to visibly work over. However, practitioners did discuss how valuable energy work was for their amputation clients; even if there was not contact with a visible limb or body area, practitioners still believed their amputation clients benefited from the touch provided in this manner.

I thought, “I’ll hold the little acupressure release for arm pain” and I start and I’ve got one hand on his upper trap and the other hand I’m touching air and I remember sitting there thinking, “If anybody comes and sees me just touching air,” but it’s where ... It was at that crease of the elbow where his elbow would have been had it. I can remember all of a sudden I start feeling a pulsing because in acupressure, when that point opens, you’ll feel a pulsing and where my hand was touching air, I’m feeling a pulsing. -P12

In addition to techniques, amputation specific considerations during treatment related to the presence of equipment such as prosthetic devices. Practitioners also highlighted a need to consider the use of treatment equipment, for example bolsters or adjustable tables, during sessions based on the nature of the amputation so as to improve the

productivity of the sessions. As with the use of specific techniques, while the use of treatment aids is not amputation specific in TMB, the way in which such aids are utilized suggested amputation specified considerations.

Practitioners also identified that prior to treatment, amputation specific questions are asked during the intake process. Specific intake questions focused on the cause of the amputation and care received, surgery and recovery processes, scar healing, and scar tissue formation. This information was recognized as important in determining particularly in relation to when the surgery took place to ensure session pacing appropriateness for each individual's point in his or her recovery. This consideration also fostered understanding for the amount of trauma the individual may have experienced and its impact on treatment progression. As explained by one participant:

So the treatment model can't be just a blueprint of just this is how we treat phantom pain because you've still got that emotional piece to it of how did they end up losing their limb, was it a trauma or were they serving the country or were they you know in an accident that was emotional? -P2

Understanding the trauma experienced by clients from the amputation enabled practitioners to recognize the amount of potentially needed emotional support in addition to the appropriate physical treatment to provide.⁽²⁶⁾ Integrating consideration of a client's physical and emotional needs helped develop strong, therapeutic relationships between practitioner and client. It also created a safe space for amputation clients, which is an aspect of care that has been documented in other research⁽²⁶⁾ but was not directly discussed among this study's participants.

Some practitioners recognized that questions asked during the intake process might lead clients to unnecessarily re-live the trauma of their amputation and/or surgery. Practitioners' approach was to focus on the client's current state and improve function, rather than drawing attention to the past and situation(s) resulting in amputation.

...The worst thing I've found is getting someone...and this I learned early on, 14 years ago, was getting a person in, asking all the questions that they hope you already have a lot of information on because they've been through this story so many times in their experience that the more we can reduce that for them the less trauma it keeps bringing back. -P3

Member Checking

Seventeen (n=17) of the invited 25 participants completed the member checking survey (68%) within a 7-day period. Overall, participants indicated themes reflected their experiences working with amputation clients (Table 2). The Value of Touch theme had the widest range of responses with 34-100% agreement levels. An item of note expressed in the open comment section involved surprise that the results did not mention mirror therapy. To address concern, a re-review of raw transcripts transpired. Of this study's thousands of lines of transcription, only one included a peripheral mention of mirror therapy; yet two member checking respondents noted the lack of inclusion of mirror therapy as a used technique by massage therapists. While these two participants and others may have thought they highlighted use of mirror therapy or the technique's theoretical foundations in their work with amputation clients, none stressed it to the point of theme inclusion. Based on member checking responses it may be safe to say that, while not a direct outcome of our qualitative interviews, there is evidence to suggest that mirror therapy is a concept familiar to and utilized by some TMB practitioners to address phantom limb pain for their amputation clients.

Discussion

Currently there is a paucity of research on TMB in the treatment of amputation related sequelae to inform evidence based practice or specific research activity. As a result, this study aimed to answer the following: a) what amputation related sequelae do TMB practitioners address in their practices, b) how and why do TMB practitioners approach and treat amputation related sequelae, c) and what kind of results do practitioners perceive their amputation clients to have from the TMB treatments and to what do they attribute the results. Our findings are that TMB practitioners: value touch and consider it a core aspect of treatment for individuals with amputations; operate under a core belief that individuals with amputations greatly benefit from TMB; consider relief that stems from TMB to be multidimensional, including physical, mental, and emotional aspects; and certain components of treatment approach are unique to amputation clients. Within these findings, participants identified and discussed their address of phantom limb pain, prosthesis comfort, residual limb restriction and function with their limb loss amputation clients in addition to other non-amputation specific concerns such as relaxation, mood and energy, function, medication use, and non-amputation related pain. With regard to specific approaches to addressing amputation related sequelae, participants noted a general application widening of the techniques they already utilize with their non-amputation

clients and described overall benefit from massage treatment for their amputation clients including less pain, improved mood, improved energy, being more relaxed, and decreased use of medications.

To our knowledge, this is the first research to examine TMB practice specific to the amputation population. It adds to the growing qualitative research efforts in the TMB field seeking to describe how and what constitutes therapeutic massage and related practices.⁽²⁶⁻²⁹⁾ This work makes an important contribution to this literature and reinforces the individuality of TMB sessions per treatment recipient and instance⁽²⁸⁾ and the multidimensional aspects of therapeutic intention and benefit.⁽²⁷⁾ Data generated from this study is not novel in the context of TMB practices in general. Massage professionals are taught that touch and its quality is a fundamental and important component of massage treatment,⁽³⁰⁾ and that the foundational techniques, such as myofascial release and energy work, and can be used and applied in countless variations and different situations to good effect. However, what is novel is that these foundational techniques/approaches can be applied to amputation clients or to address amputation specific symptoms. This suggests that TMB professionals may not need to learn new or specific techniques exclusively for those with amputation but rather, develop critical clinical reasoning to broaden their application scope of already mastered techniques to address the amputation population's unique needs. This broadening of already known TMB practice skills to the amputation population may not suffice however with regard to understanding of the amputation population's specific needs and sequelae or therapeutic relationship building considering foundational massage training's inconsistent and relatively low requirements in the United States. Recent research⁽²⁶⁾ has highlighted the potential need for specific communications training to support TMB practitioners' ability to build strong therapeutic relationships as part of client care. Considering the likelihood of having experienced trauma for those with amputations,⁽³¹⁾ such additional education and/or training may be of benefit in foundation and continuing education training for TMB practitioners.

With the publication of this work, a foundation now exists for how, why, and to what effect massage therapists work with amputation clients in their practices. Results from this study indicate TMB practitioners consider the work they do with amputation clients to be immensely beneficial; but, as with all research, our results and their implications are limited. While this study's results begin to provide greater insight into current TMB work for those with amputation, it is important to keep in mind these results reflect only the perspective and perceptions of TMB practitioners and may not necessarily reflect what amputation clients actually experience. The practitioners'

viewpoints may overestimate TMB treatment results and may project rationale and meaning not shared by the clients. The next steps of this research will seek to elucidate the extent to which TMB practitioner perspectives align with those experienced and held by individuals with amputation.

Limitations

Generalization of our study results should be considered in light of inherent limitations. Only TMB practitioners who had actually provided treatment for someone with an amputation were invited to participate which may have contributed to an experienced sample overall compared to the general TMB practitioner population. While efforts were made to purposively include those with fewer years' experience, the timing of when a TMB practitioner will treat someone with an amputation is not guaranteed. Indeed, it is likely the accumulation of time in practice (giving participants greater year's of experience) that increased the likelihood of being eligible for this study. It is also important to note that while this study's sample of practitioners may have more years of experience than the general TMB practitioner population, only one participant indicated any training specifically addressing amputation clients. Additionally, this training was not directly geared for massage therapists, but rather nurses and physical therapists who work with individuals with amputations.

We were unable to include all individuals who responded to the study and recruitment call. Although we employed a purposive sampling strategy, which allowed for a broad representation of TMB practitioners in the United States, we acknowledge the broad spectrum of North American experiences and perspective may not be captured by our sample. Specifically, our sample did not include Canadian practitioners, whose inclusion in the sample was intended but unfortunately, no Canadian practitioners self-identified as interested in participating through our recruitment efforts. In addition, there was also a relatively high percentage of participants from the southern United States in our sample which may skew results towards currently unknown cultural or regional differences in massage approach; the sample was representative of individuals who completed the survey regarding interest in participation and who answered the invitation for interviews. While some participants indicated some descriptions of amputations seen in their clinical experiences, not enough information was collected to describe a generalizable amputation population who seek TMB. A quantitative or mixed methods research approach may better produce generalizable descriptions or other TMB for amputation results to inform TMB practice guidelines. Finally, to our knowledge, there are no specific TMB unique techniques developed solely for amputation related application.

TMB techniques described and discussed by study participants reflect foundational massage therapy techniques; thus data and developed themes could be considered limited due to a relatively narrow scope-of-practice framework and education standards, especially compared to more professionalized fields. Despite these outlined limitations, our results begin to describe the positive benefits TMB offers those with amputation, at least from the practitioner viewpoint.

Conclusion

The TMB practitioner perspective is important in informing the development of a TMB practice framework for those with amputation and amputation related sequelae. While no amputation specific techniques were identified, practitioners discussed modifying foundational TMB techniques in order to best meet the needs of amputation clients. Findings support that individuals with amputation benefit from TMB. A range of health benefits were identified in the study and all appeared to function through the touch element of TMB treatment. The exploratory nature of the current research brings attention to important questions regarding approaches to treatment and potential hypotheses regarding effectiveness of TMB interventions for those with amputation. Examples of testable TMB for amputation related sequelae hypotheses generated from this work include: TMB alleviates phantom limb pain, TMB improves body awareness, amputation related functional compensation patterns, and related pain, and therapeutic relationship between amputation client and TMB practitioner improves body acceptance, and emotional amputation related trauma. The next step in this developing research program is to fully explore communication between amputation clients and practitioners and the formation of a therapeutic relationship. Future efforts will also examine the compared experiences of those with amputation and practitioners (this study's outcomes) to inform evidence based research, practice, and education recommendations.

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Author's Contributions

SS and NM conceived and designed the research and interview questions. SS conducted the interviews. SS and NM conducted initial coding, prepared the manuscript, and addressed reviewer feedback. AKR and TM provided feedback and contributed to revisions of the interview guide, coding framework, and initial manuscript. All authors read and approved the final manuscript.

Competing Interests

The authors declare that they have no competing interests.

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Tables and Figures

Table 1. Practitioner Demographic Information

	Mean, <i>N</i>	SD, %
Age (years)	46	±12.9
Gender		
Female	16	64
Overall Experience (years)		
0-5	4	16
6-10	6	24
11-15	3	12
16-20	7	28
21-29	3	12
30+	2	8
Region¹		
<i>West</i>		22
California	5	
Oregon	1	
<i>Midwest</i>		15
Indiana	2	
Kansas	1	
Wisconsin	1	
<i>South</i>		44
Florida	3	
Georgia	2	
Kentucky	1	
North Carolina	2	
South Carolina	1	
Tennessee	1	
Texas	2	
<i>Northeast</i>		19
Maryland	2	
New Jersey	1	
Pennsylvania	1	
Rhode Island	1	
Practice Setting²		
Private Practice/Wellness Center	11	44
Client's Home/Practitioners Home	7	28
Spa Setting/Holistic Center	3	12
Research/Volunteer Events	3	12
Chiropractor's Office	2	8
Hospital	2	8
Mobile Massage*	1	4
Sports Medicine Rehab Clinic	1	4
Current Amputation Client (Y)	9	36

¹Two participants indicated that they practice in 2 states

²Percentages will not total up to 100% due to several participants indicating multiple settings

*Mobile massage here indicates a vehicle designed and equipped to provide massage within the vehicle.

Table 2. Member Checking Results (N-17)

<i>Theme</i>	<i>Mean</i>	<i>SD</i>	<i>% Range</i>
1: Value of Touch	87.2	± 17.4	34-100
2: Individuals with Amputations Greatly Benefit	97.1	± 3.1	90-100
3: Relief is Multidimensional	95.1	± 7.8	72-100
4: Certain Approaches are Unique to Amputation Clients	94.5	± 9.5	63-100