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Effects of reducing pain and muscle tension and improving daily functional performance through myofascial decompression on the muscles within the cervical spine region

Kaeli Serafino
Western New England University

Effects of Reducing Pain and Muscle Tension and Improving Daily Functional Performance Through Myofascial Decompression on the Muscles Within the Cervical Spine Region

A Doctoral Experiential Capstone Project

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In Partial Fulfillment of the Requirements for the

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by

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Effects of Reducing Pain and Muscle Tension and Improving Daily Functional Performance Through Myofascial Decompression on the Muscles Within the Cervical Spine Region

A Doctoral Experiential Capstone Project Final Report

By

Kaeli Serafino, OT/s

July 2023

APPROVED BY:

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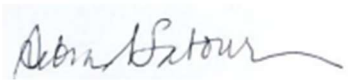
Erin Murray OT, OTD-PP, OTR/L Date

Faculty Mentor

APPROVED BY:



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Debra Latour OT, PP-OTD, M.Ed., OTR Date

Doctoral Experiential Coordinator

Abstract

The aim of this study is to investigate the effectiveness of myofascial decompression to reduce pain and muscular tension in the neck to enhance participation in daily activities and overall quality of life. The study looks at the effectiveness of this modality when applied twice per week for four weeks, with a two-week intermission between the first and last two weeks, to a sample of undergraduate and graduate students enrolled at Western New England University. This study utilizes self-report measures including the World Health Organization Quality of Life Scale (QOL-BREV), Wong Baker Pain Scale, and pain logs to assess the effectiveness of the modality on the neck. These results can be used as a resource in the field of occupational therapy and incorporated into evidence-based practice for practitioners who are seeking a more holistic and sustainable pain management technique. By using this modality, practitioners can provide their clients with complimentary or alternative approaches to pain management. This modality is sustainable within the field of occupational therapy as it is affordable, requires minimal training, and is highly accessible to obtain materials for interventions.

Keywords: Myofascial decompression, students, occupational therapy

Introduction

Chronic pain is a type of pain that is ongoing and usually lasts longer than six months. Chronic pain can highly impact an individual's life by limiting performance and function with activities of daily living (ADLs) and instrumental activities of daily living (IADLs). Based upon 2019 research, it was reported that 20.4% of adults experience chronic pain in the United States, and within this percentage, it was also reported that 7.4% of these individuals explained that this pain caused limitations within their life and daily activities (Center of Disease Control and Prevention, 2020). Through this research it is clear that pain is prevalent at a national level, however zoning into the target population, which is those within the Springfield community, it was shown that there are almost twice as many people who live with a disability under the age of sixty-five years compared to the national average (United States Census Bureau, 2020). This shows a significant gap in care for those living with chronic pain with no way of finding relief.

Through the use of literature reviews and needs assessment results it was found that there is a significant need for nonpharmacological intervention to pain. It has been long understood that the over prescription of opioids and narcotics to treat chronic noncancerous pain has led to an increase in opioid related overdose, substance abuse disorder, and death in the United States since 1999 (Bonnie, etal., 2019). Recently, there has been a growing interest in non-pharmacological pain treatment options such as myofascial decompression, also known as cupping therapy. (Cramer et al., 2020). Cupping therapy is a traditional Chinese medical treatment which has been practiced for thousands of years. The World Health Organization's (WHO) definition of cupping is a therapeutic method involving the application of suction by creating a vacuum (WHO Library Cataloguing in Publication Data, 2007). There are a variety of different techniques and materials that can be used with cupping therapy. Common techniques of

cupping therapy include dry cupping, wet cupping, massage cupping, and flash cupping. Within these different techniques, cup materials may vary between glass, silicone, plastic, bamboo, rubber, metal, or ceramic. When performing cupping therapy, it is important to know these different materials and techniques along with any indications and contraindications for the safety of the client. Indications for cupping therapy include localized conditions that cause pain or muscle tension in the neck, back, shoulder, and knee. Cupping therapy is contraindicated for people with deep vein thrombosis and should not be applied directly on veins, arteries, nerves, skin inflammation, skin lesions, body orifices, eyes, lymph nodes, varicose veins, open wounds, and bone fractures, (Aboushanab & AlSanad, 2018). This is important when assessing a client before performing cupping therapy on them for potential benefits and to prevent any harm.

The suction produced through cupping induces negative pressure inside the cup. Throughout a range of studies, it is hypothesized that inducing this negative pressure attracts blood to the area of pain, thereby removing blood stasis and increasing blood and lymph circulation locally to relieve tension and pain of the muscle (Chen et al., 2014). These physiological changes can be beneficial in treating pain and/or muscle tension found within the body.

Target Population

It was decided to bring the target population even smaller and focus solely on students at Western New England University. It has been found that approximately 41.9% to 54.6% of students experience pain within their neck according to a 2022 study (Alsaadi, 2022). A preliminary survey was sent to students in the Doctor of Occupational Therapy program, Law program, and through university posts to all students both graduate and undergraduate asking

about if they have pain in the upper body and if so, more specifics of this pain. The results from this survey showed that 75 students responded and of those 75, 69 of them reported having some type of pain consistently. Sixty-eight reported that it is exacerbated by some type of daily occupation including but not limited to sitting in class, sleeping, driving, household chores, and recreational activities, and 46 reported their pain and/or tension interferes with their daily life. This shows that 92% of the students that responded to this survey have pain and/or muscle tension, 91% report their pain is impacted by their daily occupations making them more difficult, and 61% reported their pain interferes with their daily life negatively. This showed a significant gap in care for college students making it vital to use them as the target population for this study not only to prove the effectiveness of this modality, but also to provide these students with relief to their pain and muscle tension and help improve engagement in their functional activities and daily occupations.

Doctoral Experiential Project Overview

Experiential Component

This project included multiple experiential components. The main experiential component of this project was the cupping therapy clinic which took place over a 4-week span with a two-week intermission between the first and last two weeks. During this time participants came to the Blake Law Center and were treated for pain and/or muscle tension using cupping therapy and were asked throughout their time at the clinic to be consistently documenting their results from their sessions. Overall during this experience not only were participants feeling relief, but there was now documented data on the effectiveness of using this modality for pain and muscle tension relief.

After this data had been collected and extensive research had been done about the proper use of cupping therapy including benefits, precautions, contraindications, and skin inspections this knowledge was then able to be transferred into education for others. This first began by creating an in-depth PowerPoint intended to be educational to future and current practitioners and be able to be used to supplement using this modality in their own practice. This PowerPoint detailed the benefits to clients, contraindications and precautions, protocols for performing cupping, emergency protocols, and how to complete skin inspections. This was also narrated providing deeper explanations into each topic. This was sent out to the year 1 and year 2 WNE OTD cohorts. Another portion of the experiential part of this DEx was creating an educational handout for local clinicians detailing precautions, contraindications, protocols, and benefits for clients to supplement their current practice. This flier also had a QR code linked to the educational PowerPoint for access to resources and more information on the modality.

Another PowerPoint was made in conjunction with the DEx group members in order to present an in-service presentation to the year 2 WNE OTD cohort explaining in-depth about this modality. This was especially educational as each researcher got the chance to present on their individual findings and knowledge on this topic giving the listeners 4 different perspectives on this topic and different education as each researcher had their own individual focuses. To supplement this education, there was another in-service held in the form of an open lab where students were able to work hands on simulating a cupping therapy intervention including discussing precautions and contraindications and physically applying cups to classmates under the guidance of the researchers and Dr. Murray, the faculty mentor of this project.

Scholarly Component

Throughout the DEx experience there have been multiple scholarly components that have led to the completion of this project. After completing the experiential portion of this project, the information gathered was used to submit to the 2023 MAOT conference, the 2024 AOTA Inspire conference, and to OT Practice Magazine for publishing (see Appendix E). This information was also used to write a News Story which reflects in narrative form the experience of both the researcher and the participants throughout the study. Below is the full scholarly report reflecting the process and results of the study.

Background

Through the use of literature reviews and needs assessment results it was found that there is a significant need for nonpharmacological intervention to pain. It has been long understood that the over prescription of opioids and narcotics to treat chronic noncancerous pain has led to an increase in opioid related overdose, substance abuse disorder, and death in the United States since 1999 (Bonnie, etal., 2019). Recently, there has been a growing interest in non-pharmacological pain treatment options such as myofascial decompression (Cramer et al., 2020). Cupping therapy is a traditional Chinese medical treatment which has been practiced for thousands of years. The World Health Organization's (WHO) definition of cupping is a therapeutic method involving the application of suction by creating a vacuum (WHO Library Cataloguing in Publication Data, 2007). There are a variety of different techniques and materials that can be used with cupping therapy. Common techniques of cupping therapy include dry cupping, wet cupping, massage cupping and flash cupping. Within these different techniques, cup materials may vary between glass, silicone, plastic, bamboo, rubber, metal, or ceramic. When performing cupping therapy, it is important to know these different materials and techniques along with indications and contraindications for the safety of the client. Indications

for cupping therapy include localized conditions that cause pain or muscle tension in the neck, back, shoulder, and knee. Cupping therapy is contraindicated for people with deep vein thrombosis and should not be applied directly on veins, arteries, nerves, skin inflammation, skin lesions, body orifices, eyes, lymph nodes, varicose veins, open wounds, and bone fractures, (Aboushanab & AlSanad, 2018). This is important when assessing a client before performing cupping therapy for potential benefits and to prevent any harm.

The suction produced through cupping induces negative pressure inside the cup. Throughout a range of studies, it is hypothesized that inducing this negative pressure attracts blood to the area of pain, thereby removing blood stasis and increasing blood and lymph circulation locally to relieve tension and pain of the muscle (Chen et al., 2014). These physiological changes can be beneficial in treating pain and/or muscle tension found within the body.

Methods

Participants

A preliminary survey was sent to students in the Doctor of Occupational Therapy program, Law program, and through university posts to all students both graduate and undergraduate asking about if they have pain in the upper body and if so, more specifics of this pain. The results from this survey showed that 75 students responded and of those 75, 69 of them reported having some type of pain consistently. Sixty-eight reported that it is exacerbated by some type of daily occupation including but not limited to sitting in class, sleeping, driving, household chores, and recreational activities, and 46 reported their pain and/or tension interferes with their daily life. This shows that 92% of the students that responded to this survey have pain

and/or muscle tension, 91% report their pain is impacted by their daily occupations making them more difficult, and 61% reported their pain interferes with their daily life negatively.

Inclusion and Exclusion Criteria

It was important to choose participants for this study based on an inclusion and exclusion criteria to allow for safety of the participants and success of the study. The inclusion criteria required participants to be 18 or older, currently enrolled as a WNE graduate or undergraduate student, willing to sign a consent form and participate in the study, and identification of pain and/or muscle tension that impacts their quality of life and occupational performance. Students also needed to be on or willing to come to the Western New England University campus twice per week for the duration of the study. Exclusion criteria included individuals who are 17 or younger and not currently enrolled as a WNE student. Individuals who are pregnant, have cancer, or who have broken, burned, and/or irritated skin, taking blood thinning medication, acute infection, congestive heart failure, kidney or liver disease/ dysfunction, wounds/severe systemic edema, acute fractures, and/or skin conditions (Aboushanab & AlSanad, 2018).

Data Collection

Measurements used for data collection included an initial intervention survey, the World Health Organizations QOL-BREV, pain logs, the Wong Baker Pain Scale, and a post intervention survey. Participants were all assigned a random number that they used to fill out all data collection measures as well as to be used for scheduling. No one but the researchers were aware of the identity of any participants and only participant numbers were used for data analyzing and publishing. At the first session participants filled out a QOL-BREV reporting on their quality of life in the past two weeks prior to cupping, an occupational profile, an initial intervention survey detailing their

pain at the current session including a rating of their pain and/or tension on a scale of 1-10. These assessments were administered to get a full picture of the participant and their medical history. During the following sessions participants filled out a pain log that reflected the time between sessions indicating and detailing their current pain on a scale of 1-10, and how long their relief lasted if they felt any. At the midpoint they were again asked to fill out another QOL-BREV reflecting their quality of life over the past 2 weeks along with their pain log, and at the last session they filled out their pain log, another QOL-BREV, and a final post intervention survey gathering information on the study as a whole and their overall experience with cupping.

Implementation: Protocol

The protocol followed throughout interventions is as follows. First, participants would fill out all paperwork needed for that session. Next, they would move to the area where they would be cupped, with privacy screens and beds as options, and have sanitizing wipes and lotion applied to the area to disinfect, remove body oils, and create a barrier between the skin and the cup to prevent pinching. Cups were then placed on the neck using a suction pump of 2 pumps which created a negative pressure in the cups. The cups were then left on for 8 minutes. Participants were informed that they could have the cups removed or adjusted at any time if they were uncomfortable. After the 8 minutes cups were removed and participants reported on a scale of 1-10 on how their pain and tension felt directly after cups were removed to compare to their initial rating.

Data Analysis and Results

Data that was collected throughout the process of the research was analyzed following the completion of the study. To begin analyzing data, all data from pain logs, QOL-BREV, the

pre-intervention survey, the post-intervention survey, and the running excel data sheet from each session was compiled into one excel sheet. Each data collection method was separated into its own table and separated both by participant and session. To analyze the data, the researcher looked for trends found throughout each table, created averages for each data point and each participant, and then found overall averages for each data collection measure.

Table 1: Pain Difference Immediately After Intervention

Session	*Participant*								
	2	3	6	12	15	18	23	25	33
1	-4	-3	-2		-5	-2	-6	-1	-1
2	-3	-4	0	-2	0	-3	-3	-4	0
3		-4	-1	-2	-3	-2		-4	-2
4	-2		-1	0	-1	-2	-2	-4	0
5	-3	-5	-2	-2	-1	-3	-3	-4	-3
6	-3	-3	-2	-1	-1	-3	-1	-3	-2
7	-3	-3	-0.5	-1	-1	-2	0	-4	-1
8	-2	-2	-1	-2	-1	-4	-1	-4	-1

Note: Grey spaces indicate no data from that session due to participants not attending the session.

Table 1 shows the immediate difference in pain felt from the beginning of the session before intervention, to immediately after intervention. These numbers were calculated from self-report on the Wong Baker Pain Scale which is a 1-10 rating scale. Participants were asked to rate their pain before intervention and immediately after intervention on this scale. The difference between pain at these two points of intervention are reflected in Table 1. On average it was seen that participant 2 had a decrease in pain of -2.857, participant 3 had a decrease in pain of -3.429, participant 6 had a decrease in pain of -1.063, participant 12 had a decrease in pain of -1.429, participant 15 had a decrease in pain of -1.625, participant 18 had a decrease in pain of -2.750, participant 23 had a decrease in pain of -2.286, participant 25 had a decrease in pain of -3.500, and participant 33 had a decrease in pain of -1.250. On average across all participants and sessions, an immediate relief of -2.243 was felt after intervention.

Table 2: Overall Pain Difference After Interventions

Participant Number	*Better*	*No Difference*	*Worse*
2	100%	0%	0%
3	100%	0%	0%
6	75%	12.5%	12.5%
12	87.5%	12.5%	0%
15	87.5%	12.5%	0%
18	100%	0%	0%
23	85.7%	12.5%	0%
25	100%	0%	0%
33	75%	25%	0%

Note: Each percentage reflects the percent of that participant's sessions that resulted in feeling better, no difference, or worse after intervention.

Table 2 shows the self-report data collected from participant's daily pain logs. These pain logs were filled out at the beginning of each session noting the difference they felt in the days between their last session and their present session. These represent the data from every participant session totaling 68 total sessions. Each percent represents how many times participants reported that they felt better, no difference, or worse after their sessions. Across the 68 sessions, an average of approximately 90% of sessions that resulted in a report that they felt better after sessions, approximately 8% that reported they felt no difference, and approximately 1.5% reported they felt worse. As noted in the table, only participant 6 reported they felt worse after a session and this was reported only once out of their 8 sessions. Also noted, 4 participants reported they felt better after every session they had.

Table 3: Quality of Life Questionnaire (QOL-BREV)

QOL-BREV Question	*Percentage of Participants*
How would you rate your quality of life?	67%
How satisfied are you with your health?	89%
To what extent do you feel that (physical) pain prevents you from doing what you need to do?	89%
To what extent are you able to carry out your daily activities?	89%
How much do you enjoy life?	78%
How satisfied are you with your sleep?	78%

Note: Each percentage reflects the number of participants who reported a positive result from beginning to end on these questions.

Table 3 shows the responses to the World Health Organization QOL-BREV questions that were most relevant to the study. These are not the extensive list of questions asked on this questionnaire, but were found to be the most likely impacted by this study. This table shows the percentage of participants who yielded a positive result from the initial to final QOL-BREV questionnaires on these specific questions. This is reflective of participants who either stayed the same in their rating on these questions or improved from the initial responses to the final responses. It was found that 89% of participants reported a positive result related to their overall quality of life, the prevention of physical pain limiting participation in daily activities, and how much they were able to carry out daily activities. It is important to note for this questionnaire that initial responses for many participants stayed the same if at the beginning of the study their responses were at “very good” or “extremely satisfied.”

Table 4: Hours of Relief Felt After Intervention

Session	*Hours Relief Is Felt*

	2	3	6	12	15	18	23	25	33
2	24 hr	18 hr	12 hr	24 hr	6 hr		3 hr	9 hr	24 hr
3		24 hr	0 hr	18 hr	0 hr	24 hr		24 hr	36 hr
4	48 hr		1 hr	3 hr	3 hr	24 hr	1 hr	24 hr	36 hr
5	48 hr	36 hr	3 hr	3 hr	1 hr	24 hr	3 hr	18 hr	36 hr
6	36 hr	36 hr	3 hr	6 hr	1 hr	24 hr	3 hr	18 hr	24 hr
7	48 hr	36 hr	9 hr	9 hr	1 hr	24 hr	3 hr	18 hr	24 hr
8	48 hr	36 hr	9 hr	6 hr	1 hr	24 hr	3 hr	18 hr	24 hr

Note: Grey spaces indicate no data from that session due to participants not attending the session.

Table 4 shows the self-report data of how long participants felt sustained relief after sessions. This data was collected and analyzed from the pain logs filled out by participants and reflects the time in-between sessions. On average participants felt pain relief for approximately 18 hours after intervention. Many participants reported they felt immediate relief but by the following day they felt their muscles begin to tense up again.

Discussion

This study aimed to show the impact myofascial decompression can have on the pain and muscle tension of the neck as well as the effects this has on functional performance. Participants overall reported that immediate relief was felt in the vast majority of the sessions they had, however long-term relief was not as often seen. Most participants would report feeling best immediately after sessions and then would slowly feel the pain and tension return for the next day. Participants often reported their pain levels had returned by the next session they had. This shows that though myofascial decompression has the ability to relieve pain and tension in the neck, it needs to be done more frequently than two times per week in order to have long lasting effects.

This however opens a great opportunity for occupational therapists use of this modality as a preparatory method similarly to paraffin, TENS, and other physical agent modalities. This

modality is cost effective, time efficient, and fast acting. Therefore, this can be a useful tool to begin a session with to allow for increased range of motion, decreased pain throughout the session, and higher endurance for functional activities. By reducing the pain and tension with myofascial decompression, occupational therapists are able to make their sessions more effective and allow for their patients to not only feel relief from pain but also have more task endurance for both the session and likely the rest of their day.

This modality is also accessible for at home use as the cupping sets can be purchased online through retailers such as Amazon.com for less than $50. With education on the use of the modality and consultation with medical professionals those struggling with pain and muscle tension can also use this method at home. It would be highly encouraged to speak with a doctor about possible contraindications and precautions to rule out safety concerns with this modality however once cleared by a doctor, it is very accessible and cost effective to use this modality at home.

Limitations

There were multiple limitations to this study. The first limitation is using self-report data. Though it is very useful to have data and feedback directly from participants, there are many variables that cannot be controlled using this type of data. This includes participants with different pain tolerances. Participants may be showing less improvement through data than they truly experience due to having a high pain tolerance, with their initial pain ratings lower than the average person would rate them. Similarly, participants are asked to keep track of their pain over the days they are not in the clinic and report back during their sessions. This allows for error in reporting from participants who forget to keep track or have a skewed memory of their reaction to the intervention. Another limitation was participants QOL-BREV may be impacted by other

factors. All participants were students and throughout the study participants experienced finals, a small summer break, and graduations. Some participants also graduated from the Law program and began intensive studying for their Bar Exam. Due to these changes that were external to the study, it may be difficult for participants to rate their quality of life accurately without these factors playing a part in their responses.

Another limitation to this study was the sample size and population. Many participants who signed up for this study had to be disqualified due to contraindications and precautions for this modality to ensure their safety. However, many were also disqualified for being inconsistent with their appointments and data collection. Students also dropped out of the study due to unexpected job opportunities after graduation forcing them to leave the area and no longer be able to attend sessions. This limited the sample size to 9 participants which is relatively small and may not be fully generalizable to all students.

Conclusion

It has been concluded that this modality has the potential to relieve pain and muscle tension in the neck and provide at the least, immediate relief. More research needs to be done to conclude the use of this modality has a long-term pain and tension relief method as the results of this study in this area vary. It has also been concluded that use of this modality as a preparatory method for skilled occupational therapy intervention has the ability to lead to pain and tension relief during sessions as well as increased functional performance and endurance. Participants in this study reported they felt an increase in quality of sleep, faster recovery times from intense physical activity, and overall improved performance in daily activities after intervention.

Discussion and Recommendations

Throughout the process of the DEx it was found that myofascial decompression is a useful tool for short term and immediate relief of pain and muscle tension in the neck. The information gathered from this study was able to be transformed into PowerPoints, handouts, and educational in-service presentations (see Appendix C) to inform OTD students and local clinicians on the use of this modality. It is recommended that both students and clinicians use this information to guide their practice in the future use of this modality to ensure a positive and safe experience for their clients. OTD students now have the tools to use this modality within the Bear Paw clinic to obtain hands-on experience with this technique while also allowing for pain and muscle tension relief. It is recommended in the future for occupational therapists to use this as a preparatory method for intervention to allow for increased task endurance and improved results throughout OT sessions.

Learning Outcomes

The DEx project was entirely guided by preset learning objectives created by the researcher, faculty mentor, and site mentor in order to ensure this project was able to reach its full potential. These objectives have been completed by the researcher under the guidance of both the faculty and site mentors. One important thing learned from this research experience was collaboration and interprofessional practice with participants and researchers. Throughout the DEx this researcher worked with students from undergraduate programs, the OTD program, and the Law program to run the cupping therapy clinic. During this time the researcher also collaborated with DEx group members and mentors to allow for ideas and processes to be enhanced. The researcher also learned about professional practice while completing in-services for classes, contacting local professionals, and working with students within the clinic. Built into

the clinic data collection was a professionalism survey for students to fill out anonymously in order to get honest feedback and create space for professional development.

Throughout the experiential and scholarly portions of this project, a literature review, a needs assessment, as well as the accumulation of self-reported data and interviews assisted in learning about cupping therapy and about the population as a whole. It has been very important to understand the prevalence of pain as well and how cupping can make a difference. Through the scholarly portion of this project specifically, the researcher had the opportunity to learn about the processes of submitting to professional conferences such as MAOT and AOTA as well as to professional publications such as OT Practice. This has allowed for the development of professional writing as well as an understanding of how to be concise yet informative within an abstract. Throughout the experiential portion, not only was it helpful to get hands-on experience working with clients but also to gain experience learning to teach others. Through the creation of handouts, narrated PowerPoints, flyers, and in-service presentations there has been a unique experience how to take research and a literature review and turn it into something digestible to different populations. It was important to learn to tailor the information to specific audiences and give enough support to allow for cupping to be delivered appropriately to participants.

Lastly and possibly most importantly throughout this process the researcher learned patience and flexibility not only with clients but their self as well. Learning to navigate stressful and challenging times without allowing it to negatively impact the process as a whole was something this researcher will be able utilize with her throughout their entire professional career.

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Appendix A

Literature Review

Problem and Unmet Need

The over prescription of opioids and narcotics for individuals with chronic pain is a problem within the United States. Chronic pain is a type of pain that is ongoing and usually lasts longer than six months. Chronic pain can highly impact an individual's life by limiting performance and function with activities of daily living (ADLs) and instrumental activities of daily living (IADLs). Based upon 2019 research, it was reported that 20.4% of adults experience chronic pain in the United States (Center of Disease Control and Prevention, 2020). Healthcare providers have prescribed pain medication such as opioids and narcotics at greater rates which increases the occurrence of addiction, overdose, and other health complications. These healthcare providers need more holistic pain-reducing treatments to reduce the possible risks associated with pain medications. Recently, there has been a growing interest in non-pharmacological pain treatment options such as myofascial decompression (Cramer et al., 2020).

Myofascial decompression, which is also known as cupping therapy, is a relatively new modality in the United States. Cupping therapy is a form of alternative therapy which involves placing specific cups on the skin to create a suction. Cupping therapy has potential benefits of increasing blood circulation, relieving muscle tension, improving overall blood flow, and reducing chronic pain (Healthline, 2019). There is a need for the adoption of cupping therapy throughout different professions in healthcare including occupational therapy (OT), for these services to become more accessible to different communities, and to provide more holistic

services in areas of poverty. It is important that occupational therapists adopt this modality into their pain management treatment to increase function and independence in ADLs and IADLs.

In Springfield, Massachusetts, there is a high rate of poverty (United States Census Bureau, 2020). With having a high rate of poverty comes potential for individuals to have an increased risk of addiction, lack of education about healthcare services available, lack of transportation to healthcare services, lack of expenses for medical needs, or lack of health insurance (American Addiction Center, 2021). Within this community, there is a lack of education and cupping therapy services for people who are experiencing chronic pain. Increasing the amount of education and cupping therapy services throughout multiple healthcare professions, can help increase the overall quality of life of people within this community. Furthermore, these services can eliminate the use of opioids and narcotics by using a holistic approach to pain management.

Target Population

The target population for this study includes people who struggle with pain management. Based on 2019 research, it was reported that 20.4% of adults experience chronic pain in the United States. Within this percentage, it was also reported that 7.4% of these individuals explained that this pain caused limitations within their life and daily activities (Center of Disease Control and Prevention, 2020). Within the Springfield community, it was shown that there are almost twice as many people who live with a disability under the age of sixty-five years compared to the national average (United States Census Bureau, 2020). The target population of the Springfield community was chosen specifically to help with pain management and also with the hope that this modality will eventually become more widespread across the country. The

target population was sought out due to the statistics which show their need for pain management services to help decrease pain as well as increase participation in their daily activities.

One reason this specific community is targeted is because they need a nonpharmacological treatment for pain management. As stated above, chronic pain is a problem across the nation as well as in this community specifically. Springfield is enduring an opioid epidemic with the highest opioid-related death rate in all of Massachusetts. Springfield has a 65% higher opioid-related death rate than the rest of the state in previous years. Due to this epidemic, it is imperative to provide an alternative modality for pain management for this community (Murray, 2021). This community would greatly benefit from cupping therapy as a way to relieve and manage their pain in a more holistic way. This community also has a lack of cupping services which opens up a gap in care. In Springfield, Massachusetts, Baystate Health owns the majority of healthcare and pain management centers within the community. Baystate does not offer cupping therapy as part of their pain management programs which leaves a need for this community to have access to this therapy (Baystate Health, n.d.).

Introduction

Cupping therapy is a traditional Chinese medical treatment which has been practiced for thousands of years. The World Health Organization's (WHO) definition of cupping is a therapeutic method involving the application of suction by creating a vacuum (WHO Library Cataloging in Publication Data, 2007). There are a variety of different techniques and materials that can be used with cupping therapy. Common techniques of cupping therapy include dry cupping, wet cupping, dynamic cupping, and flash cupping. Within these different techniques, cup materials may vary between glass, silicone, plastic, bamboo, rubber, metal, or ceramic.

When performing cupping therapy, it is important to know these different materials and techniques along with indications and contraindications for the safety of the client. Indications for cupping therapy include localized conditions that cause pain or muscle tension in the neck, back, shoulder, and knee. Cupping therapy is contraindicated directly on veins, arteries, nerves, skin inflammation, skin lesions, body orifices, eyes, lymph nodes, varicose veins, open wounds, bone fractures, and sites of deep vein thrombosis (Aboushanab & AlSanad, 2018). This is important when assessing a client before performing cupping therapy on them for potential benefits and to prevent any harm.

Throughout a range of studies, it is hypothesized that inducing negative pressure attracts blood to the area of pain, thereby removing blood stasis and increasing blood and lymph circulation locally to relieve tension and pain of the muscle (Chen et al., 2014). These physiological changes can be beneficial in treating pain and/or muscle tension found within the body. Furthermore, a literature review has been completed comparing and contrasting different themes found within areas of the neck and lower back, as well as strengths, and weaknesses.

Effectiveness and Benefits of Cupping Therapy

Researchers have conducted studies on cupping therapy to determine its overall effectiveness on individuals who have experienced pain or muscle tension. After reviewing the literature, most studies have proved that cupping therapy can be used as either a potential or effective treatment method to reduce pain or muscle tension (Aboushanab & AlSanad, 2018; Arsan et al., 2015; Lauche et al., 2011; Moura et al., 2018; Saha et al., 2017; Teut et al., 2018; Volpato et al., 2020; Wang et al., 2020). Within these studies, most individuals were experiencing back or neck pain which has impacted these individual's daily life and their

occupational performance. After their treatment, their overall quality of life has increased due to decreased pain and muscle tension. A holistic, safe, and alternative treatment option such as cupping therapy can also provide benefits such as promoting blood flow, reducing inflammation, promoting overall health, preventing pain and muscle tension, providing therapeutic relief, and increasing an individual's overall quality of life (Aboushanab & AlSanad, 2018; Wang et al., 2020).

Common Methods Used to Determine Effectiveness

Comparing similarities among the findings, the most used method of measuring outcomes was the visual analogue scale (VAS). The VAS was consistently used among the references and presented with lower scores after treatment implying that the cupping modality helped with their pain (Akbarzadeh et al., 2014; Lauche et al., 2011; Lauche et al., 2012; Leem, 2014; Markowski et al., 2014; Saha et al., 2017; Singh & Siahpush, 2016; Wang et al., 2017; Wang & Tang, 2020). This instrument is an assessment tool used before and after the intervention for measuring pain to monitor and quantify an increase or decrease in pain. Another common outcome measure used a pre- and post-test measurement using the health-related quality of life questionnaire (Kim et al., 2018; Lauche et al., 2011; Lauche et al., 2012; Leem, 2014; Saha et al., 2017; Teut et al., 2018). The Quality of Life Questionnaire was also being used as an outcome measure on multiple different body parts such as the neck, shoulders, and back pain. Chronic pain and muscle tension can be debilitating and can affect an individual's quality of life. The findings have found that cupping therapy can have a significant improvement on the quality of life among the pain management population. When reflecting upon the use of cupping therapy on neck pain, it was stated that after completing cupping treatments, there were sustainable effects on both quality of life and physical function for up to two years with patients experiencing chronic neck pain

(Leem, 2014). In addition, improvements were found in quality of sleep and aiding one's quality of life using cupping therapy within just one week of starting treatments (Volpato et al., 2020).

Common Needs in Further Research

According to the literature review conducted it was found that although cupping was seen to be useful, there is also limited information available on the topic. It is found more randomized control trials (RCTs) are needed to make the evidence more concrete (Cramer et al., 2020; Lauche et al., 2012; Leem, 2014; Moura et al., 2018; Saha et al., 2017; Volpato et al., 2020). It also was found that cupping therapy was effective in increasing quality of life for patients with chronic non-specific neck pain, but that more rigorous studies are needed to confirm and extend these results (Saha et al., 2017). When certain studies were conducted, there was no current information about cupping for chronic non-specific neck pain. Therefore, it was found that more studies are needed to back up the findings. These studies were also met with many limitations including several patients being lost during the studies course making the sample sizes less generalizable. Studies using a single group design found cupping to be useful but because of the single group design and the considerable dropout rate further RCTs with long term follow up are needed to confirm results (Leem, 2014). Overall, it was found across these articles that cupping is useful in decreasing pain and increasing quality of life, however in order to have concrete evidence to back up this claim more RCTs are needed. Specifically, RCTs with long term follow up and larger sample sizes. If these studies can be conducted more concrete evidence will be able to be formulated for the usefulness of cupping therapy.

Alternative Data to the Effectiveness of Cupping Therapy

Although there are many articles proving that cupping therapy is effective for relieving pain and reducing muscle tension, there are some articles that resulted in no improvements (Lauche et al., 2011; Lauche et al., 2012; Silva et al., 2019; Silva et al., 2021). For example, one study stated that their participants reported their pain intensity on the lower end of their inclusion criteria scale. This means that the participants had zero to minimal pain from the beginning or that they exaggerated their complaints during screening to ensure inclusion into the study which likely limited the possible absolute reduction in pain intensity (Lauche et al., 2012). Another reason that cupping therapy did not show improvement is because individuals had different pain thresholds (Lauche et al., 2011). One study compared cupping therapy to sham cupping and noted that similar improvements in all outcomes was likely a consequence of the placebo effect (Silva et al., 2019; Silva et al., 2021). As a result, future studies with more well-defined inclusion/exclusion criteria for participants in pain are needed to prove that cupping can be used as a beneficial therapeutic modality and to reduce the consequence of the placebo effect.

Conclusion

Even though cupping therapy has been used around the world for a long time, there is still a need to research this therapeutic modality further. Most research studies have shown evidence that proves that cupping is an effective treatment for relieving pain and muscle tension. The research has also shown that there have been significant findings with improvements regarding quality of life after treatment as well as cupping therapy's ability in promoting blood flow, reducing inflammation, promoting overall health, preventing pain and muscle tension, and providing therapeutic relief. However, there is still a need for research, utilizing more RCTs with larger sample sizes to further prove its effectiveness and reliability as a pain management treatment and to expand on current findings.

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Appendix B

Needs Assessment

Problem and Unmet Need

The over prescription of opioids and narcotics for individuals with chronic pain is a problem within the United States. Chronic pain is a type of pain that is ongoing and usually lasts longer than six months. Chronic pain can highly impact an individual's life by limiting performance and function with activities of daily living (ADLs) and instrumental activities of daily living (IADLs). Based upon 2019 research, it was reported that 20.4% of adults experience chronic pain in the United States (Center of Disease Control and Prevention, 2020). Healthcare providers have prescribed pain medication such as opioids and narcotics at greater rates which increases the occurrence of addiction, overdose, and other health complications. These healthcare providers need more holistic pain-reducing treatments to reduce the possible risks associated with pain medications. Recently, there has been a growing interest in non-pharmacological pain treatment options such as myofascial decompression (Cramer et al., 2020).

Myofascial decompression, which is also known as cupping therapy, is a relatively new modality in the United States. Cupping therapy is a form of alternative therapy which involves placing specific cups on the skin to create a suction. Cupping therapy has potential benefits of increasing blood circulation, relieving muscle tension, improving overall blood flow, and reducing chronic pain (Healthline, 2019). There is a need for the adoption of cupping therapy throughout different professions in healthcare including occupational therapy (OT), for these services to become more accessible to different communities, and to provide more holistic services in areas of poverty. It is important that OTs adopt this modality into their pain

management treatment because of their holistic approach and focus on independence in ADLs and IADLs.

Pain and Quality of Life Within College Students

Pain can have a significant impact on a student's quality of life and academic performance. Students who experience chronic pain have a higher risk of developing mental health conditions such as anxiety and depression which impact their quality of life. These mental health conditions can further exacerbate their pain symptoms and impact their ability to engage in their daily occupations outside of their role as a student. In addition, pain can interfere with a student's sleep patterns such as quality, duration, and efficiency which impacts their executive functioning skills that affect their concentration and focus during class (Noel et al., 2016). Chronic pain can also have a significant impact on a student's quality of life, as it can interfere with their activities of daily living, social, and leisure occupations. Students with chronic pain may experience physical limitations such as difficulty with functional mobility which can make it challenging for them to participate in extracurricular activities that they enjoy. As a result, students with chronic pain may miss out on important educational opportunities, experience academic decline, and struggle to achieve their full potential.

Target Population

The target population for this study includes students at Western New England University (WNE) whose pain and/or muscle tension impact their ability to independently engage in their daily activities. Throughout this capstone, the researchers will be focusing on students who experience pain and/or muscle tension in their arms (triceps, biceps, forearm),

shoulder, cervical region of the spine(neck), thoracic region of back (upper back), and lumbar region of back (lower back).

Based on a study conducted by Saad M. Alsaadi, the most common sites of musculoskeletal pain in students include the neck and back. Approximately 41.9% to 54.6% of students experienced pain within their neck and 48.2% to 49.4% experienced it within the back. Students reported that their pain had impacted their daily life and quality of sleep (Alsaadi, 2022). When students' pain begins to impact their daily activities, they are unable to fully participate in leisure activities and school related activities. The inability to be independent in these daily activities correlates with difficulties in mental health regarding stress, anxiety, and depression impacting their quality of life (Alsaadi, 2022). This target population was selected to make a pain management technique such as cupping therapy more accessible to these students to prevent these difficulties in quality of life and limited independence.

According to WNE student statistics, the student population consists of students that are from 38 different states and 22 different countries (Western New England University, n.d.). As a high majority of these students are from different states and countries, they may not know what their local and available pain management resources may be in Springfield, Massachusetts. Along with the limited resources these students may have financial worries which have impacted their decision to seek out pain management options. College students have a high rate of stress regarding concerns with paying back loans, cost of tuition, academic supplies, and cost of living due to their inability to work full-time while they are in school, which impacts their quality of life (Moore et al., 2021). The target population of WNE students were chosen specifically so that their needs for pain management can be assessed and be given resources for cost-effective pain management options such as cupping therapy. In addition, this specific population is targeted

because there is a need for nonpharmacological treatment for pain management which can be accessible and cost effective. This population would greatly benefit from cupping therapy for an holistic approach to pain management and increase their quality of life. At WNE, there are currently no cupping therapy services which opens up a gap in care and leaves a need for students to have access to this

Resource Availability

Cupping sets can be found on online retailers such as Amazon or Walmart making it widely available for consumers to purchase. The difference between buying the set online compared to going to outpatient clinics such as seeking out physical therapy, massage therapy, or Western New England University's athletic training (WNE AT) facility is that there is no education on the implications, contraindications, or procedures provided when purchasing the sets themselves. When completing cupping by themselves, the client can identify where the pain is that they are experiencing. A skilled clinician can apply the cups on specific parts of the client's body where they have pain because they have been trained in myofascial decompression. Further education such as reviewing literature, listening to clinicians' podcasts, watching education videos would be required when completing cupping on self or others. Unfortunately, clinical education on cupping comes at a price, whether that is taking paid online courses such as Certified ACE Massage Cupping or by reading articles such as this article called Cupping for Treating Pain: A Systematic Review (Kim et al., 2018). There are also limitations to going to outside clinicians and programs such as WNE AT's program for regular services due to limited acceptability due to not being an athlete or based on therapists' discretion, along with co-pays or lack of transportation if needed.

The WNE's athletic training program is an available resource to students on campus. However, they must be student athletes, therefore this would be a limitation for accessibility. Recently the University has developed the Bear Paw Center which is available to the WNE students and Springfield community which serves as a pro bono clinic run by WNE OTD students and trained professionals who can treat a variety of conditions, chronic pain being included. Researcher's goals are to educate and provide an in-service to the OTD students and faculty who run the clinic about what myofascial decompression is, its protocols, contraindications, any precautions, and how to properly perform cupping therapy on individuals experiencing pain. This clinic will serve as a resource for the WNE students to continue to receive cupping therapy treatment at no additional cost to them.

Barriers

Cupping therapy is a new and unfamiliar modality that has recently made its way to the United States as a client-centered technique that can support pain management. With that being said, the United States has recently adopted this practice and is still very unknown to many people seeking treatment for pain management, especially with the target population. Because of this recent adoption into medicine, there are some barriers that individuals might be faced with when seeking out use of this modality. One major barrier would involve the lack of knowledge regarding the use of cupping therapy (Markowski et al., 2014). Due to the recent adoption into medicine, many people are uneducated and lack knowledge on this modality and its many benefits in regards to pain and muscle tension relief. Especially in younger people, a lack of knowledge on ways to treat pain in a holistic and nontraditional way is a major barrier to receiving this type of treatment.

Another barrier for this population would be access to this modality on campus. When going to college, many people are traveling far from home and do not have doctors they see around their college campus. Therefore, they rely on health services for the majority of their treatment unless they are an athlete. Due to health services not offering pain management through cupping, many people in this target population will be missing out on this modality to assist with their pain. For athletes, they will have access to cupping therapy while in season through the athletic training center, however when they are not in season it becomes more difficult to get cupping from athletic trainers as they prioritize in season athletes for treatment. This then poses the same barrier as it does for non-athletic college students, there is nowhere on campus to get this treatment.

Barriers within the WNE community may include financial burdens of being a college student and many students living far from home therefore not having access to their primary health care. These barriers can affect the ability to access healthcare, pain management services, or cupping therapy (Bodenheimer, 2005). Financial burdens can prevent access to transportation, education of services, and insurance for pain management services. There has been a reported increase in out-of-pocket payments for people with chronic conditions which in turn leads to discouraging people to get health care and participate in programs to manage their illness (Paez et al., 2009). This can be seen in this young population as well, due to the financial burden healthcare can cause as well as the lack of access to a person's primary healthcare, especially in chronic cases, as people are discouraged from getting the help they need. Also, because there is a high demand for medical care within the communities, this creates difficulties in receiving health care appointments or referrals especially following the COVID-19 pandemic.

Due to a lack of resources and information regarding the cupping modality, cupping is not offered in most University programs, leading to individuals needing to attend different facilities or private practices to receive pain relief using this technique. Due to the lack of clinics and facilities performing this modality, insurance companies could be unfamiliar and not take the insurance needed to perform the technique. Also, this could prevent clinics from making medical referrals for individuals who want cupping services. Overall, the barriers of lack of knowledge, lack of access, and financial burdens cause barriers to pain management for this population.

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Appendix C

Below are educational resources created throughout this project.

INGOUDE

A GUIDE TO CUPPING THERAPY

By: Kaeli Serafino OT/s

WHO CAN NOT GET CUPPED?

There are very specific precautions and contraindications for cupping therapy. People should consult their doctor before getting cupped if they have any of the following:

- Pregnancy
- Frail/ fragile skin
- Cancer / Cancer treatment
- Any systemic medical condition where there are concerns with circulation/ microvascular safety
- Breast feeding

Avoid cupping **completely** if a client has any of the following

- Acute infection
- Congestive heart failure
- Kidney or liver disease/ dysfunction
- Wounds/ severe systemic edema
- Bleeding disorders
- Skin conditions/ diseases
- Taking blood thinners

BENEFITS

1. Decreased Pain and Muscle Tension

The suction in the cups causes the capillaries under the skin to break. This triggers a response from the body similar to a blunt force injury which starts the natural healing process by sending more blood to the area.

2. Increased Blood Flow to the Area

By improving blood flow, the damaged area is provided with fresh oxygen to help heal muscles, bring more nutrients to the area to assist with healing, and help with waste management allowing for better recovery times with sore muscles.

3. Increased Lymphatic Drainage

When the flow of lymph is blocked, it prevents the body from removing toxins from that area. Increased lymphatic flow and drainage helps remove toxins from sore areas assisting with repair and preventing build up.

PROTOCOL

1. Prepare skin by cleaning skin with alcohol wipe and putting lotion on the area that will be cupped
2. Place cup over muscle group that has pain and/or muscle tension. Do not place cups over damaged skin (wounds, sunburns, etc.)
3. Put 2 full pumps of suction into the cup and leave cups on for 8 minutes.
4. Pull up on release tab on top of cup to remove cups after 8 minutes
5. Inspect skin for any adverse effects

For more detailed information on benefits, protocols, and skin inspections scan the QR code above! Scan this code to also find the references supporting this information. .

This is a handout created and sent to local clinicians to be used as an educational reference for occupational therapists that may use this modality in practice.

Release Form

Please indicate below if you do or do not have any of the following precautions or contraindication.

	Yes	No
Pregnancy		
Frail and/or fragile skin		
Cancer		
Breast Feeding		
Any acute infections		
Congestive heart failure		
Kidney disease / dysfunction		
Liver disease / dysfunction		
Wounds		
Severe edema		
Acute fractures		
Bleeding / blood disorders		
Skin conditions / diseases		
Taking blood thinning medication		
Heart disease		

This form was used during the open lab in-service for participants to practice going through the contraindications and precautions with clients before performing this modality.

Educational PowerPoint for Students

Scan this QR code to view the informational PowerPoint created for WNE OTD students. This PowerPoint was created as an educational tool for WNE OTD students to learn more about the basic protocols, precautions/contraindications, benefits, and more and to sue as a reference when using this modality on clients in the future.

Educational PowerPoint for In-service

Scan this QR code to view the informational PowerPoint created to supplement the in-service that was presented to the year 2 WNE OTD students. This presentation was used to give

background information to the students of the year 2 OTD cohort before their open lab where they practiced this modality on each other.

Appendix D

Below are QR codes linked to all the surveys, pain logs, and questionnaires used in the data collection for this study that participants filled out throughout the process of this study.

Recruitment Survey

This was the initial survey sent to potential participants to recruit for the study.

QOL-BREV Survey

This survey was filed out at the first session, the midpoint if intervention sessions, and the final sessions.

Neck Pain Log

This pain log was filled out at the beginning of every session by participants to track their pain and muscle tension throughout the study.

Post-Intervention Survey

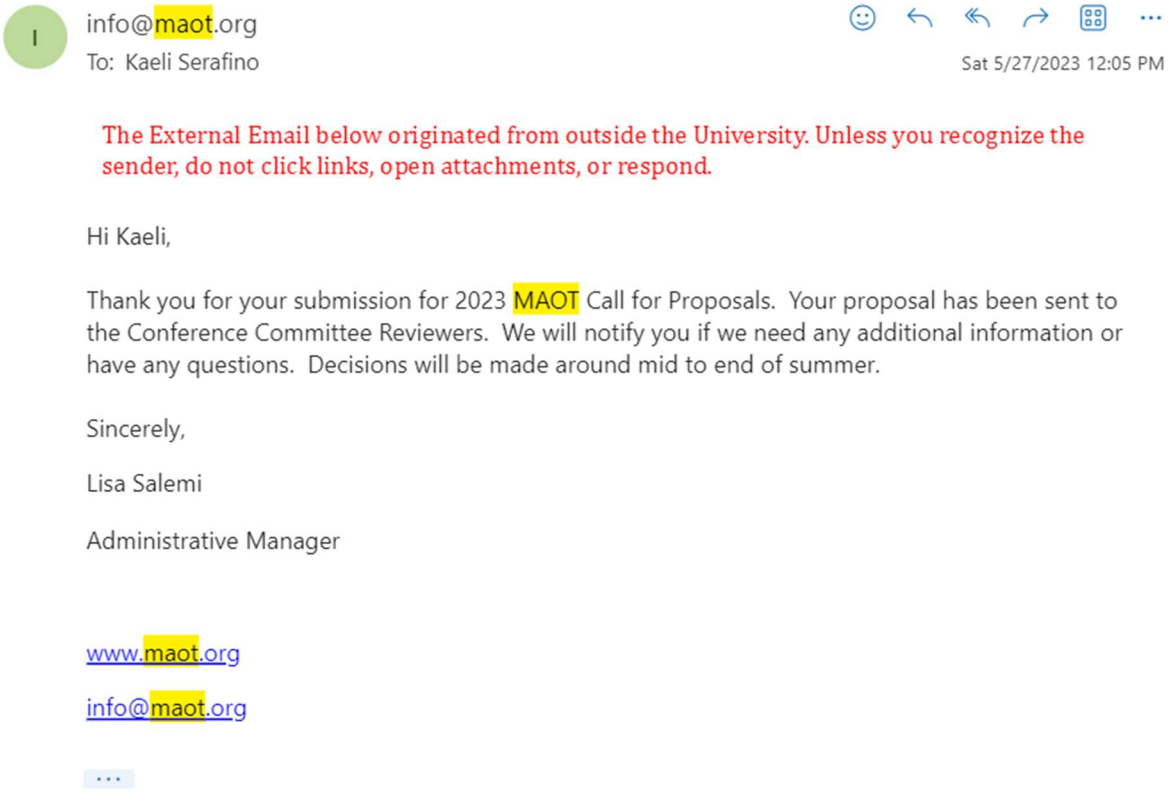
This survey was completed by participants on their last session to give feedback on professionalism, the interventions, and how they felt about myofascial decompression as a whole.

Pre-Intervention Survey

Scan the QR code to view the survey filled out by participants prior to their first session. This survey was meant to collect information about the client before putting any cups on them,

Appendix E

Scholarly Works



I

info@maot.org

To: Kaeli Serafino

Sat 5/27/2023 12:05 PM

The External Email below originated from outside the University. Unless you recognize the sender, do not click links, open attachments, or respond.

Hi Kaeli,

Thank you for your submission for 2023 MAOT Call for Proposals. Your proposal has been sent to the Conference Committee Reviewers. We will notify you if we need any additional information or have any questions. Decisions will be made around mid to end of summer.

Sincerely,

Lisa Salemi

Administrative Manager

www.maot.org

info@maot.org

...

Above is the receipt of submission for the MAOT 2023 conference.

Proposal Submission for INSPIRE 2024

Welcome to the AOTA Proposal Submission Form!

8652 - **Improving Participation in Daily Occupations Using Myofascial Decompression**
Conference: INSPIRE 2024
Type Of Proposal: General
Submission Status: Completed
Acceptance Status: Pending · *View Reviewer Feedback*
View/Print | Withdraw

Above is the receipt of submission to the AOTA Inspire 2024 conference.

Your request (158660) has been updated. To add additional comments, reply to this email.

Lisa Gwaltney (AOTA Customer Service)
Jul 12, 2023, 10:33 AM EDT

Hi Kaeli,
Thank you for your submission. I will review your article as soon as possible, and I will be back in touch then. It may take several weeks, so I thank you for your patience in advance.
Best,
Lisa

Lisa Gwaltney
Editor, *OT Practice*
American Occupational Therapy Association (AOTA)
Office: 240-482-4124
www.aota.org

Above is the receipt of submission for OT Practice Magazine.

Scan the QR code to read the News Story assignment. This News Story was written to give a narrative overview of the DEx process. In this piece of literature, you can find an overview of the project as well as quotes from myself and actual participants in the study reflecting on the experience.