Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in Chronic Pain Management

By © Christina Serpa

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements of the degree of:

MPE Master of Physical Education

School of Human Kinetics and Recreation

Memorial University of Newfoundland

February 2022

St. John's, Newfoundland, and Labrador

ABSTRACT

This study brings together research from the fields of chronic pain management, complementary alternative medicine (CAM), and somatic practices to enlighten the chronic pain population, massage therapists, and manual therapists about a novel and lesser-known framework of movement principles within the Trager Psychophysical Integration MD method (Mentastics). Mentastics is a set of non-weight-loaded movement combinations (Slade & Keating, 2007), the nature of which is to gently use gravity and one's own "feeling" of the movements to execute them. This exploratory and descriptive study examined individuals' perceptions of the Mentastics technique to help support people living with persistent chronic pain. Seven participants watched a 15-minute video introducing Mentastics and then participated in an online semi-structured interview, which asked them about their opinions and perceptions of the Mentastics technique video. Four major themes evolved from the participants' remarks: (1) Mentastics for themselves and others, (2) Mentastics an exploration of movements, (3) Inclination towards positive feelings, (4) Mentastics adaptations. Results have the potential to offer a new way of supporting and offering a lesser-known self-care protocol for mobility maintenance and shaping the future of massage education practices in the field of chronic pain. This study demonstrated the high potential of the Mentastics technique, in possibly aiding with the alleviation of perceived pain levels, within the demographic of individuals dealing with chronic pain.

Keywords: Chronic pain, Pain management, Complementary alternative medicine (CAM), Active Movement Education, Trager MD.

DEDICATION

I dedicate this thesis to my miracle son Mikel Kelly and husband of 17 years, Justin Kelly; your positive influence has been a shining light in the darkness on numerous occasions.

ACKNOWLEDGEMENTS

I would like to give great thanks to my life partner and husband, my son Mikel Kelly, fellow graduate students, and friends. Thank you for your encouragement and support throughout the entire thesis process.

This thesis would not have been possible for my participants, especially during this pandemic. Thank you for sharing your stories, opinions, and perceptions concerning your chronic pain self-care and life experiences.

To my supervisors, Dr. Angela Loucks-Atkinson, and Dr. David Hancock, I am thankful for your guidance and understanding throughout my Master's degree. Your guidance and support kept me on track even during my discouragement and difficulties.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE - INTRODUCTION

A large portion of the North American population suffers from high levels of physical pain and discomfort (Johannes et al., 2010; Loisel et al., 2002; Meana et al., 2004; Schopflocher et al., 2011). Pain is technically a human experience that combines both emotional and physiological responses. The sensory response of pain can be linked to actual or potential tissue harm. Pain has been characterized by two primary differentiations: acute and chronic pain. Acute pain often occurs within three months or less, whereas chronic pain occurs for six months or more. When pain is present for approximately 3 to 6 months, it is referred to as sub-acute (Woolf, 2010). A traditional belief linked to pain is that healthy tissue requires anywhere from two to four months to regenerate fully; therefore, acute pain should be resolved within that time frame (Woolf, 2010). However, if the chronic pain is not resolved within the healthy time frame, additional issues impact whether pain continues, and a pain management protocol should be implemented to maintain one's quality of life (Johannes et al., 2010).

There are three primary clinical definitions of pain: nociceptive, inflammatory, and pathological (Woolf, 2010). The most common is nociceptive pain, which is the reaction to physical harm (Woolf, 2010). Inflammatory pain results from tissue impairment and the need for the body to encourage restoration by producing pain sensitivity until healing is established (Woolf, 2010). Pathological pain is a state of ailment in the nervous system, referred to as neuropathic or dysfunctional (Woolf, 2010). Malignant pathological pain, initiated by different types of cancers, is often due to changes in the nervous system's anatomy. Nerves may change due to cancer pressing on

nerves or because of chemicals produced by a tumor. Cancer treatments cause physiological changes in the body, which can manifest malignant pain. Non-malignant pathological pain is non-cancerous pain (Money & Garber, 2018). Non-malignant inflammatory and pathological chronic pain are the primary types of pain referred to in the research literature presented in this proposal.

In a Centers for Disease Control and Prevention (CDC) report, Dahlhamer et al. (2018) demonstrated that 20.4% (approximately fifty million) of American adults lived with moderate chronic pain, while an additional 8% of the population experienced severe chronic pain. Thus, more than one-quarter of the US population lives with chronic non-malignant pain (Dahlhamer et al., 2018). A 2016 cross-sectional US survey identified that 33% of the adult population suffered from some form of chronic pain (mostly lower back pain), the incidence of which increased with age (Johannes et al., 2010. Half of those reporting chronic pain experienced it daily, and their average pain intensity was severe (Johannes et al., 2010). Approximately 20% of adults in Canada suffer from chronic pain, mostly from lower back and arthritic pain (Schopflocher et al., 2011). Half the participants reported suffering from chronic pain for 10 or more years, with one-third reporting it as severe (Schopflocher et al., 2011).

Living with chronic pain appears to significantly and negatively affect one's quality of life. For example, Canadian data indicated that back pain among adults was one of the strongest predictors of major depression (Currie & Wang, 2004). Women diagnosed with fibromyalgia and who experienced chronic pain as a primary symptom had difficulties adapting to different social situations, experienced emotional instability, and suffered mental health issues, making it challenging to manage stress and adapt to

changes (Laursen et al., 2005). Chronic pain sufferers also demonstrated deficits in working memory and emotional control issues (Baker et al., 2016). These results align with the Activity Restriction Model of Depressed Affect, which explains that those experiencing chronic pain are often diagnosed with depression and mental illness since routine movements become a challenge, creating a vicious cycle of decreased physical ability, and forced seclusion from society (Gilmour, 2015; Katz, 2002; Williamson & Shaffer, 2002). Living with chronic pain can lead to further physical and cognitive disability (Laursen et al., 2005; Scudds & McD Robertson, 1998) due to decreased life satisfaction (Scudds & McD Robertson, 1998; Sherman et al., 2004) and increased public and private health care costs (Lynch et al., 2008). Lastly, young adults diagnosed with non-malignant chronic pain suffer the negative effects and perceived limits to their future vocational and life goals (Stinson et al., 2013). In fact, chronic non-malignant pain in a US cross-sectional study was linked to unemployment or engaging in unstable contracted work (Johannes et al., 2010), demonstrating additional negative financial implications among this population.

The negative ramifications of pain are especially visible among older adults. Among older individuals, chronic pain is associated with reduced mobility, physical activity cessation, increased risk for falls, anxiety, sleep impairment, and isolation (Reid et al., 2015). These are merely a few of the negative consequences older adults face when living with long-term enduring pain. Chronic pain is a significant health issue as approximately 65% of older adults living in the community and 80% of those living in long-term care facilities experience high levels of pain (Lynch, 2011; Lynch et al., 2008). In 2014, there were over 6.5 million Canadians aged 65 years or older (Government of

Canada, 2016), and Milan (2011) estimates that by 2036, one-quarter of Canadians will be 65 years of age or older, increasing the urgency of pain management for older adult Canadians.

Several researchers have highlighted the lack of pain diagnosis and treatment among older adults, reflecting a failure to adequately address this rapidly growing Canadian population (Ferrell et al., 2001; Hadjistavropoulos et al., 2009). Reid et al. (2015) recommended that older adults have regular, full geriatric holistic pain assessments, though this rarely occurs. Furthermore, Lynch et al. (2008) demonstrated that people who suffer from chronic pain deteriorate while waiting for access to care, which results in increased pain and decreased overall health. Often, those suffering from pain turn to opioid prescriptions rather than seeking alternative therapies and improvements in overall physiological maintenance, such as balanced diets and physical activity participation. This trend has elevated the use of opioids in North America in the last decade, often with significant negative consequences, such as opioid addiction and overdose (Hadjistavropoulos et al., 2007; Häuser et al., 2017). Given that more than half of those suffering from chronic pain reported trepidation about drug addiction (Moulin et al., 2002), it is imperative to explore non-pharmacological alternatives to pain management. Instead of only considering pharmacological interventions as the primary method for treating pain, health care practitioners are encouraged to implement a variety of complementary and alternative medicines that holistically treat the individual, aiding in the development of a holistic pain management intervention protocol.

The prevalence of pain has created a need for additional pain management protocols in North America, which led to establishing the Canadian Pain Task Force in

2019 (Anderson et al., 2019). The task force was created to aid the Government of Canada to better comprehend the global trend of pathological non-malignant pain and the Canadians living with it. This organization will provide advice and data to direct government guidelines to prevent and organize chronic pain protocols in Canada (Anderson et al., 2019). The creation of this task force leads one to hypothesize the need for pain management information in Canada. It also highlights the government's lack of practical application of past information on addressing non-malignant chronic pain.

Economic Implications of Pain

Chronic pain has significant economic implications, which should be particularly concerning for governments that offer universal healthcare subsidized through levied taxes. In Canada—which has universal healthcare for all citizens—researchers estimate that health care costs are 50% higher for patients living with chronic pain compared to patients living without chronic pain (Hogan et al., 2016). Bone and Joint Canada (2014) estimates the cost of medical expenses for Canadians experiencing low back pain to be between $6 and $12 billion annually. Economic implications of pain extend into the workforce. For instance, back pain is estimated to cost employers over $50,000 (USD) per 100 employees each year due to employee absence and healthcare costs (Flutur et al., 2019). To reduce economic implications, researchers have examined preventative pain management approaches. Loisel et al. (2002) implemented a back-pain prevention program, saving the company over $18,000 per worker after six years. Therefore, it might be beneficial to provide patients with pain management techniques and access to care at interdisciplinary academic or private pain centers (Tarride et al., 2015).

There is also a significant negative financial impact on those living with chronic pain. The Canadian STOP-PAIN Project surveyed 370 patients living with chronic pain to obtain a cost estimate of their government-subsidized and privately paid chronic pain treatments. The average monthly cost of treatment was $1,462, with 95% of the total paid privately (Guerriere et al., 2010). This treatment cost equates to a monthly out-of-pocket expense of $1,389, or $16,667 annually, a considerable amount for many Canadians. Nearly 75% of individuals living with pain require additional pain management treatments that they consider too expensive and are unable to afford (Angus Reid Institute, 2019). In fact, 92% of Canadians believe that those experiencing pain ought to have access to effective, government-subsidized pain management treatments, regardless of personal income (Angus Reid Institute, 2019). It is not surprising that more than half (54%) of Canadians living with chronic pain are dissatisfied with government-subsidized pain management treatments. Unfortunately, only 1% of the total funding from the Canadian Institutes for Health Research is committed to researching and understanding pain (Lynch et al., 2009), perhaps indicative of the low priority placed on pain management treatments.

Background of the Researcher

As the principal investigator, I have a college diploma as a recreation technician, a Leisure studies Bachelor's degree, and I am a certified naturopathic and massage therapist. For more than a decade, I have specialized in working with individuals dealing with chronic pain in both private practice and government-funded organizations. My interests stem from my personal diagnoses of fibromyalgia, nervous system damage from

the childhood disease of meningitis, and a spinal injury in the womb that created scoliosis. Experiencing malignant-chronic pain aided me in building rapport with participants, recruiting individuals for the study, creating the interview guide, and analyzing the results. Applying pragmatism concentrating on uncovering useful knowledge enabled me as a researcher to engage with multiple experiences perceptions and incorporate them into a useful synthesis for application. As a graduate student researcher with no funding and limited resources, this situation makes utilizing research findings essential. Specifically, focusing on useful knowledge to the participants at the beginning of the inquiry was vital for facilitating practical findings related to effective patient care.

Rationale for the Study

Complementary Alternative Medicine (CAM) practices and more traditional non-pharmacological health methods could potentially benefit from a closer working relationship in the area of chronic pain management (Greenberg et al., 2019). Manual movement therapy is a category of complementary and alternative medicine that encompasses several techniques, including effleurage (stroking), petrissage (kneading), percussion, rocking, and oscillating (Kong et al., 2013). Popular North American manual movement therapy techniques include acupressure, myofascial release, shiatsu, Swedish massage, and the Trager® Psychophysical Integration (TPI) method (Benjamin, 2010). TPI combines elements of manual movement therapy (i.e., table work) and an active self-care movement therapy component referred to as Mentastics. Mentastics is a set of non-

weight-loaded movement combinations (Slade & Keating, 2007), the nature of which is to gently use gravity and one's own "feeling" of the movements to execute them.

TPI research has concentrated primarily on the table work part (manual movement or massage). Within the massage technique, the physical benefits have been documented when treating physiological issues and non-malignant pain within various populations. (Duval et al., 2002; Dyson-Hudson et al., 2001; Globe et al., 2004; Parr & Witt, 1989; Witt & MacKinnon, 1986). The Mentastics portion of TPI is understudied despite the potential benefits for low-income individuals who need affordable pain management therapies. In a study conducted for those with a spinal cord injury and chronic shoulder pain, Mentastics was briefly mentioned as potentially beneficial (Dyson-Hudson et al., 2001). Still, its effectiveness was not directly measured. Mentastics, as a standalone technique, has not been studied as a therapeutic method of chronic pain management. With little published scientific research concerning the Mentastics method, a preliminary study was conducted introducing the chronic pain population to this inexpensive self-care movement technique. Consequently, the purpose of this exploratory and descriptive study was designed to discover individuals' perceptions of the Mentastics technique among individuals living with chronic pain. The study also contains perceptions concerning virtual versus in-person protocols for individuals experiencing chronic pain.

The Mentastics protocol could help support the millions of people in Canada and perhaps worldwide who live with chronic pain (Blackburn, 2004). Mentastics offers a different way of thinking about movement (Blackburn, 2003); however, many AME somatic movement types of practices are absent from chronic pain research, such as Body-Mind Centering (Meehan & Carter, 2021). For a method to be meaningful to the

people living with pain, it should offer an increased focus on personal, modifiable, and positive experiential perceptions (Shanthanna et al., 2020).

Theoretical Framework: Behavioral Change Models

A few behavioral theories or models can be related to decisions in behavioral change. An effective pain management program or protocol would use specified steps to increase a person's motivation and resources for change and continuation or increase self-efficacy (Shafir & LeBoeuf, 2002). Different procedures may be more important at different points in the behavioral change process. A general overview of some common behavioral conceptual models in health promotion is described below.

The Knowledge-Attitude-Behavior (KAB) model has been used to explain the role of knowledge or the learning process in creating self-change (Shafir & LeBoeuf, 2002). The KAB model suggests that behavior changes slowly, and as information is assimilated, it accumulates in a health behavior domain; over an elapsed time, changes in attitude may result in lasting behavioral changes. Therefore, an individual just finding out about the Mentastics method creates a possibility for new knowledge accumulation.

The transtheoretical (TTM) or ‘stages of change’ model has become the dominant model within the health promotion practice in North America (Bunton et al., 2000). Health promotion specialists use techniques to move to the next stage of change. One examines the barriers and offers alternatives to overcome them (Bunton et al., 2000). The five stages are labelled as precontemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1983). The second step of the “model of the stages of change,” contemplation, was used to assess, analyze, and categorize the

transcribed data into themes. Health promotion specialists use techniques to move individuals to the next stage of change. Examining the barriers to change allows one to offer better-suited alternatives to facilitating the change process (Bunton et al., 2000).

The Health Belief Model (HBM) was the first theory-based model of behavior developed with a concern for public health issues (Glanz et al., 2008). HBM theory includes (1) a person's perceived risk for acquiring an illness or health condition, (2) perceived severity (an awareness of the personal impact of becoming ill), (3) perceived benefits (the good that may result from participating in definite behaviors such as reducing the threat of a disease), (4) perceived barriers (the estimated problems in performing the behaviors and or the negative consequences that may arise from performing said actions), (5) cues to action (such as learning that a family member had a heart attack or diagnosed with diabetes), (6) bodily events (such as acute aches or pains), and (7) self-efficacy (a person's perception that he or she can perform a specific behavior) (Glanz et al., 2008). Applications of HBM to lifestyle behaviors are often used in pain management protocols which may require life-long behavioral changes.

Social Cognitive Theory (SCT) stems from social learning theory and offers an all-inclusive model for understanding health-related behaviors and helping to modify them (McAlister et al., 2008). The SCT concept of reciprocal determinism suggests that behavior is formulated by aspects of the environment and participant, balancing within set parameters (McAlister et al., 2008). The primary notions of the SCT behavior model include (1) skills mastery (the ability to perform said skill), (2) self-efficacy (the confidence that one can perform that skill), and (3) outcome expectancies, for the result to

occur from doing the behavior (McAlister et al., 2008). Key environmental points include modeling (learning by watching another in the action) and availability (whether circumstances and items are available for use/ participation) (McAlister et al., 2008). The primary goal of SCT, to change behavior, is concerned about one's aptitude to control one's own behavior: "self-control" (McAlister et al., 2008). Self-control is developed by setting precise behavioral change objectives, taking the behavior, rewarding oneself for goal attainment, and participating in alternative goal setting when they are not attained to find new, more achievable goals (McAlister et al., 2008). The motivational aspect of SCT is what is labelled as outcome expectancies. This is defined as the need to achieve positive outcomes and avoid negative ones (McAlister et al., 2008). With this study, participation in a Mentastics protocol would have to be perceived to create positive effects and help avoid a negative result, i.e., help decrease pain.

Theory of Reasoned Action (TRA) was initially developed to explain the link between attitudes and behavior (Montano & Kasprzyk, 2015). TRA dictates that individuals are expected to participate in a behavior when they plan to perform said action. The likelihood to accomplish a behavior is higher among individuals who are more positive about the behavior. A person's subjective opinion or perception is an interactive equation of the strength of their attitudes and subjective norms combined to cause an intention and motivation (Montano & Kasprzyk, 2015).

CHAPTER TWO - LITERATURE REVIEW

Complementary and Alternative Medicine in Pain Management Protocols

Traditional medicine often focuses on pharmacological treatments for chronic pain, which have demonstrated negative effects on quality of life. As an alternative, many individuals now seek holistic methods for chronic pain management treatments, including manual movement therapy, active movement education, herbs, acupuncture, and meditation (Marletta et al., 2015). Coinciding with this trend, academic and governmental groups now recognize complementary and alternative medicine therapies as effective chronic pain management treatments that individuals can leverage to maintain or regain their health while avoiding the negative consequences of prolonged opioid use (Marletta et al., 2015). Unfortunately, the efficacy of complementary and alternative medicines has not been adequately demonstrated (Artus et al., 2007; Marletta et al., 2015; Smith, 2004), highlighting the need for continued research in the field.

Manual Movement Therapy

An evidence-based option for pain management treatments is manual movement therapy, which various cultures have used for its health-related benefits (Benjamin, 2010). Manual movement therapy is a category of complementary and alternative medicine, typically executed using the hands, a designed tool (e.g., roller, ball), or a mechanical device (e.g., electrostimulation machine). Historically, manual movement therapy was used for healing and was practiced as a primary form of medical intervention (Field, 2018). Contemporary researchers have demonstrated that manual movement therapy (1)

positively affects individuals who experience depressive symptoms (Dreyer et al., 2015; Hou et al., 2010); (2) reduces pain (Majchrzycki et al., 2014); (3) enhances relaxation (Bauer et al., 2010; Field et al., 1996); (4) improves sleep (Field et al., 2002); (5) creates positive emotions (Lindgren et al., 2014); and (6) facilitates the injury recovery process (Crane et al., 2012). Additionally, manual movement therapy might even help grow muscle cells, enhance concentration, and improve the immune system (Field, 2016).

Since manual movement therapies focus on manipulating soft tissue to encourage health (Moyer et al., 2004), the potential for pain management treatments is high. In many chronic pain studies, manual movement therapies have been found to significantly reduce individuals' pain and increase their functioning (Field, 2018). For instance, patients with chronic musculoskeletal pain benefited from manual movement therapy interventions (Field, 2018). Field (2018) conducted a narrative review on chronic pain, encompassing numerous forms of non-malignant pain (back pain, joint lower limb pain, knee pain, neck and shoulder pain, arthritic pain, and fibromyalgia). The review demonstrated positive results in pain management, yielding equivalent positive results when using massage therapy with physical therapy protocol and exercise program adherence (Field, 2018). Tsao's (2007) review of massage therapy pointed to a high level of support for the "analgesic effects of massage," using a pressure point type of massage for non-malignant lower back pain treatment, but lower effectiveness supporting its use for shoulder and headache pain. Elder et al.'s (2017) research study published a 40% improvement in bodily (psychologically perceived) pain domain following massage therapy, which measures eight health concepts: physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to personal or emotional problems,

emotional well-being, social functioning, energy/fatigue, and general health perceptions. During this study, primary care physicians referred approximately 85 participants to licensed massage therapists for 10 sessions over a 12 to 24-week period. It was also noted that adults over the age of 49 reported better pain and disability management results versus younger adults (Elder et al., 2017).

Pharmacological interventions may not always be needed in chronic pain management protocols. Researchers compared two groups experiencing chronic low back pain, one only having received deep tissue massages and the other having deep tissue massages combined with non-steroidal anti-inflammatory drugs. The study showed a significant improvement in both pain levels experienced and the self-reported disability measure in both groups to almost equivalent levels, suggesting the effectiveness of prescription deep tissue massage protocols in managing back pain (Majchrzycki et al., 2014). One of the oldest types of massage (Ayuverdic) hails from Indian culture, with numerous combinations of stroking and pressure techniques compared to traditional Western massage methods (Kumar et al., 2017). Researchers recently reported a large decrease in pain for 64 older adults following an Ayurvedic massage intervention (Kumar et al., 2017).

Although manual movement therapy appears to have pain management benefits while the client maintains their treatments, chronic pain might return when ceasing manual movement therapy (Field, 2018). Thus, numerous types of manual movement therapy might provide an excellent alternative or additional therapeutic modality for those suffering from chronic pain when used consistently.

Active Movement Education

A second alternative approach to pain management treatment is active movement education, defined as non-weight-loaded exercise movement combinations (Slade & Keating, 2007) such as yoga, tai-chi, and dance therapy. The muscular system is not overloaded for active movement education to increase its size and induce hypertrophy but simply activated to boost circulation. Researchers have discovered that active movement education has comparable benefits for pain management treatment as more traditional exercises such as weight-intensive strengthening and high-intensity stabilization (Field et al., 2003; Slade & Keating, 2007; Steihaug & Birgitte-Ahlsen). Benefits range from low back pain reduction (Cramer et al., 2013; Posadzki & Ernst, 2011), migraine management benefits (Posadzki et al., 2011), osteoarthritis bone and pain stabilization (Tsai et al., 2013), and an increase in mobility and muscular coordination (Tsai et al., 2013).

Researchers have demonstrated that yoga is useful for various pain-associated disorders (Büssing et al., 2012). Specifically, a meta-analysis on the effectiveness of yoga sessions on pain and "associated disability" reported positive results for back pain, rheumatoid arthritis, headache, and migraines. Cramer et al. (2013) performed a systematic review of 10 randomized controlled yoga trials and 967 participants with chronic low back pain. The review found robust evidence that for immediate and longer-term, effects on pain reduction were high, though continued participation was required for long-term benefits (Cramer et al., 2013). Another review of 10 randomized clinical trials suggested that active types of yoga lead to larger decreases in pain than a multitude of different types of interventions such as standard medical care, physical therapy type

therapeutic exercises, relaxing or stretching types of yoga, touch with manipulation techniques (massage), or no intervention at all (Posadzki et al., 2011). These empirical studies on yoga provide strong support for incorporating therapeutic yoga protocols into lifestyle habits for those suffering from chronic pain.

Tai chi might also be an effective method for reducing chronic pain among individuals suffering from various chronic pain ailments (Hall et al., 2011; Peng, 2012). A systematic review analyzed five randomized control trials dealing with individuals diagnosed with osteoarthritis. According to the review, all the trials recorded significant benefits in physical ability or "health status." This same publication also reported data concerning a Cochrane review that contained four tai chi trials for individuals dealing with rheumatoid arthritis. The Cochrane review published that tai chi significantly improved mobility or range of motion in those studied (Peng, 2012).

Volunteers between the ages of 18 and 70 with consistent low back pain (n=160) participated in a tai chi versus a wait-list group randomized control trial (80 individuals per group). The tai chi participants who experienced group sessions up to 40 minutes in length for a period of 10 weeks had pain reduced by 1.3 points and back pain symptoms by 1.7 points on a 10-point scale (Hall et al., 2011). An additional tai chi study for individuals diagnosed with osteoarthritis consisted of eight sites, and 27 to 28 participants engaged in three classes per week for a period of 20 weeks. Pain and physical capacity all improved over time in the tai-chi group. In addition to these findings, the study reported that no negative outcomes resulted from tai chi participation (Tsai et al., 2013). Thus, all the above-stated research points to group tai-chi as a safe, simple, and effective protocol in managing chronic non-malignant pain.

Lastly, dance therapy might be a promising method for managing chronic pain (Shim et al., 2017). A research study testing dance movement therapy had 22 people with chronic pain engage in a 10-week group intervention. Assessments of resilience, kinesiophobia, body awareness, pain, mood, stress, and relaxation were measured. Post-intervention, it was found that 68% of participants rated their results as feeling "moderately to a great deal better" (Shim et al., 2017).

In sum, recent research on various types of active movement education demonstrated its effectiveness in pain management treatment among various populations dealing with chronic pain. Due to their similarity in movement patterns and non-contractile objectives of the muscular system compared to muscular stimulation for hypertrophic benefits during high-intensity exercise, other types of active movement education might offer similar and positive results.

Trager® Psychophysical Integration Method

The Trager® Psychophysical Integration (TPI) method is a complementary and alternative medicine treatment that combines elements of manual movement therapy and active movement education. First, TPI includes a manual movement therapy experience, referred to as table work. This experience requires the therapist to create sensations using gentle rocking, stretching, and mobility techniques. Typically, table sessions range from 45 to 90 minutes (Blackburn, 2003). Second, TPI involves an active self-care movement therapy component called Mentastics. Mentastics consists of gentle and pleasurable forms of movement to enhance the human locomotor experience. These movements aim to improve circulation, enhance free-form mobility exploration, and decrease pain

associated with the active stretch reflex response (Blackburn, 2003). Mentastics was developed as a system of self-treatment for individuals unable to receive regular TPI sessions due to financial limitations (Liskin, 1997). By design, Mentastics should offer the same benefits to its participants as a table session. The third component of TPI includes therapist-guided meditation and kinesthetic awareness, termed hook-up. The therapist guides clients towards accepting pain-free activity and the notion that movement can be enjoyable instead of agonizing. Hook-up refers to the action of connecting the pleasurable movements one's body creates during a TPI massage or active movement education session to the concept of pain-free movement in one's own body (Blackburn, 2003).

TPI has health benefits, such as inducing a state of relaxation (Duval et al., 2002) and improving muscular mobility (Parr & Witt, 1989). Additionally, increasing a client's therapy involvement (e.g., setting goals or practicing self-care) has beneficial effects for treatment outcomes and the patient's satisfaction with the quality of care, leading to more efficient healing (Arnetz et al., 2004). Since the Mentastics protocol is an initiative-taking process of self-care within TPI (Dyson-Hudson et al., 2001), engaging in Mentastics could enhance an individual's health outcomes.

Research on TPI has documented benefits in chronic pain management for patients across a range of diseases. For instance, individuals diagnosed with chronic obstructive pulmonary disease (COPD) experience thoracic cage inflexibility, creating pain when engaging in physical activities (HajGhanbari et al., 2012). Additionally, COPD patients experience low back pain, general back problems, and muscular cramps (Chen et al., 2017) that, if unmanaged, negatively affect their quality of life (Johannes et al., 2010).

Increasing chest expansion and mobility in COPD patients has been associated with the ability to manage pain (Malaguti et al., 2009). One of the first published TPI studies was performed on 12 participants diagnosed with COPD who received 20-minute TPI table work sessions, approximately every two weeks (Witt & MacKinnon, 1986). Due to the interventions, participants with COPD improved their chest wall mobility, allowing for more effective lung expansion and increased oxygen intake. Ultimately, this led to reduced pain for this participant group.

Individuals with cerebral palsy might also benefit from TPI. Cerebral palsy is a movement disorder characterized by motor impairment, poor coordination, stiff/weak muscles, and cognitive delays (Krigger, 2006). For individuals living with cerebral palsy, consistent and chronic muscular pain is problematic (Opheim et al., 2009; Ramstad et al., 2011). Implementing a case study design, Parr, and Witt (1989) used TPI with a child who had cerebral palsy. The authors reported an overall improvement in muscular mobility, a perceived decrease in pain, and suggested TPI as an effective tool to treat posture and movement disorders (Parr & Witt, 1989). Though this case study reported potential long-term benefits of TPI, further research is needed to understand the generalizability of TPI in pain management treatments.

Another painful disorder is Parkinson's disease, which often manifests and progresses later in an adult's life. Parkinson's disease is a neurodegenerative disorder characterized by a combination of a decrease in the ability to control one's movements with rest tremors, rigidity, or stiffness manifesting in one's limbs, trunk, and back, leading to spinal instability (Burton, 2008). Back pain is often present due to the muscular imbalances Parkinson's patients' experience as their rigidity increases (Berardelli et al.,

2001; Burton, 2008; Ghaffari & Kluger, 2014). Researchers using TPI demonstrated that participants with Parkinson's disease who took part in an active 20-minute table session (lying supine, directed towards an affected limb) reported a reduced evoked stretch response resulting in less muscle rigidity and pain (Duval et al., 2002). Thus, TPI appears to be an effective pain management treatment for Parkinson's patients.

A study of community-dwelling individuals revealed there are approximately 290,000 wheelchair users in Canada, with 68% of those using manual wheelchairs (Smith et al., 2016). The nature of daily manual wheelchair use leads to high rates of chronic shoulder pain (Morrow et al., 2010). Taking a TPI approach, Dyson-Hudson et al. (2001) studied 18 participants who had spinal cord injuries, used manual wheelchairs, and suffered from chronic shoulder pain. Participants received 10 table work sessions and Mentastics exercises over a 5 to 9-week period. The authors discovered that the TPI intervention decreased participants' chronic shoulder pain, which improved range of motion, independence, and quality of life during recovery (Dyson-Hudson et al., 2001). These results might also generalize to individuals suffering from chronic shoulder pain, regardless of cause.

It is estimated that 3-4% of young and middle-aged adults suffer from chronic headaches (Pace, 2019). Chronic headache sufferers have a lower quality of life and believe their affliction yields extraordinarily little social awareness and, therefore, very little treatment support outside of medication (Winston et al., 2018). Patients with chronic migraine-type headaches incur higher medical costs compared to those with high-intensity sporadic headaches (Stokes et al., 2011). Once again, TPI demonstrated promising results for pain management treatment for this population. Globe et al. (2004)

randomly assigned 29 participants suffering from chronic headaches to one of three groups: no treatment, attention treatment, and TPI. The TPI group witnessed a 44% decrease in medication use, whereas the attention treatment group reduced medication use by 19%, and the no treatment group had an increase in medication usage of 25% (Globe et al., 2004). Despite positive results, no known research has followed in the 15 years since the study was published. To the author's knowledge, no other researchers have studied the benefits of Mentastics on chronic pain.

Deviating from physical pain, TPI has been studied in relation to emotional pain (i.e., grief symptoms that decrease physical activity and quality of life; Kempson, 2001). Massage therapists offered the TPI technique as intentional touch therapy to 65 bereaved mothers in the study. However, Kempson (2001) found no statistically significant results between the intervention and control group on grief symptom improvement. Though TPI was ineffective in reducing emotional pain, Kempson encouraged further use of self-care protocols like TPI to aid in long-term recovery and management of physical discomfort manifested due to lack of exercise adherence and sleep inconsistencies.

TPI research has concentrated primarily on the table work part (manual movement or massage). Within the massage technique, the physical benefits have been documented when treating physiological issues and non-malignant pain within various populations (Duval et al., 2002; Dyson-Hudson et al., 2001; Globe et al., 2004; Parr & Witt, 1989; Witt & MacKinnon, 1986). The Mentastics part of TPI is understudied, despite the potential benefits for low-income individuals who need affordable pain management therapies. Mentastics was briefly mentioned in the study conducted for spinal cord injuries and chronic shoulder pain as a probable beneficial component (Dyson-Hudson et

al., 2001). Still, its effectiveness was not directly measured. Mentastics, as a standalone technique, has not been studied as a therapeutic method of chronic pain management. With little published scientific research concerning the Mentastics method, a preliminary study is needed to introduce the chronic pain population to this inexpensive self-care movement technique. Consequently, the purpose of the proposed study was to explore the perceptions of Mentastics for individuals living with chronic pain.

Purpose of the Study

Throughout the literature review, it has been highlighted that there is a need to understand how those with chronic pain maintain adherence to a chronic pain management protocol to decrease financial impact and offer additional non-pharmacological alternatives. According to behavioral change models, opinions, perceptions, and openness to change must be present to introduce an effective and long-term lifestyle change. The main research question that guided the research was: “What are the perceptions of individuals living with chronic pain concerning the self-care Mentastics technique?.” From the research question, these sub-questions were explored:

1. Do you believe following a Mentastics on a regular basis would decrease pain?
2. Would you consider incorporating the Mentastics into your pain management routine?
3. If you could change anything about the Mentastics protocol, what would it be?

4. Would there be a difference in whether you would use the Mentastics if it were done via one-on-one format versus a group class versus a video intervention?

These questions were designed to gather information from the participant's position instead of a massage or manual therapist viewpoint. Understanding the individual with chronic pain's perspective can help create resources that will motivate them to develop a long-term pain management protocol.

This study focused on individuals over the age of 40 diagnosed with a form of chronic pain. Previous research has highlighted the benefits of TPI (Duval et al., 2002; Dyson-Hudson et al., 2001; Globe et al., 2004; Parr & Witt, 1989; Witt & MacKinnon, 1986), but never isolated the Mentastics component nor concentrated on the behavioral perceptions of participants. These studies either did not include the participants' views or had only a small section concerning the likelihood for continued participation or adherence to a Mentastics protocol. Thus, our knowledge and understanding of the Mentastics method and participants' openness to the said protocol are almost non-existent.

This study aimed to expose individuals with chronic pain to Mentastics in an affordable and economical format. The information found from this study can have value in other settings. Faculty members in Active Movement Education certification could use the information collected to review and implement any changes in the program for those suffering from chronic pain. Furthermore, Massage educators could review the information in other academic institutions to consider whether their curriculum would benefit from a Mentastics type movement component.

This exploratory and descriptive study was designed to discover individuals' perceptions of the Mentastics technique. A qualitative method was used because the data collected required explanatory detail to fully understand and record the participant's perceptions. This method encouraged the participants to discuss their opinions of the subject more clearly than a quantitative approach. The advantages of using a qualitative approach also included gaining additional perspectives on motivational behavior and formats for therapeutic application of the methods. This insight will help create a holistic understanding of pain management processes during different phases of pain intensity (acute versus hibernation) and capture specific details that will benefit practitioners who work with chronic pain management protocol development in both traditional and alternative medicine. This study's goal was to increase evidence to support the inclusion of Mentastics techniques into pain management programs and provide informational insight into participants' perspectives and values. Currie and Wang (2004) furthered this notion by stating that qualitative methods should be utilized when the primary goal is to uncover the 'how' and 'why' questions related to the field. The study's objective was to discover if individuals who suffer from chronic pain and are actively engaged in a nonpharmacological pain management protocol are open to incorporating the Mentastics technique into their regime.

CHAPTER THREE – METHODOLOGY

This exploratory, descriptive study utilized a qualitative approach to explore participants' perceptions of the Mentastics protocol. This chapter provides an overview of the pragmatic paradigm utilized for the study. Sample and recruitment procedures are discussed, and participants are described. Finally, data collection and data analysis procedures are explained.

Paradigm

A paradigm is "…. a basic set of assumptions that guide their [researchers'] inquiries" (Creswell, 1998, p. 74). Thus, a paradigm is a worldview that directs the researcher's selection of research questions (i.e., what should be studied), the methodology (i.e., how it should be studied), and the interpretation of results (Kivunja & Kuyini, 2017). My overarching belief as a researcher is based on the importance of discovering results that can be used to inform real-world issues. Since the research goal was to understand participants' perceptions that could lead to recommendations for increased use of Mentastics, I selected the pragmatic paradigm (Creswell & Clark, 2017; Maxcy, 2003; Rorty, 1980). Pragmatism is a research approach for probing and evaluating ideas and beliefs (hypothesis) in their practical functioning/application. The use of pragmatism in research methodology dates to the 19th century (Creswell & Clark, 2017; Goldkuhl, 2012). Epistemologically, pragmatism is based on the idea that researchers should avoid getting influenced or concerned heavily with metaphysical debates about the nature of reality and focus instead on specific, real-world issues (Maxcy, 2003).

As a practitioner, pragmatism was selected for its potential to reveal economic savings for both individuals and government and initiate a process of change for pain management protocols. I found a pragmatic approach with its epistemological focus on the real world and practicality more useful than research philosophies. Moreover, as a practitioner, I find that pragmatism is of significant value to research in behavioral health change processes and application as viewing people's ideas and beliefs as tools for problem-solving.

Sample and Recruitment Procedures

To abide by the guidelines stated by the Tri-Council Policy for the Ethical Conduct for Research Involving Humans, the current research was approved by Interdisciplinary Committee on Ethics in Human Research (ICEHR #20211403-HK; Appendix: A). The parameters for this study were established prior to the recruitment and data collection process. Inclusion criteria included being an English-speaking adult over the age of 40 living in Canada, diagnosed with non-malignant pathological chronic pain, and having participated in a consistent pain management protocol within the past five years. Chronic pain is linked to the degenerative aging process (Domenichiello & Ramsden, 2019), changes in body composition (non- harmonizing muscular tissue ratios, weakness, imbalances, and injuries), as well as chronic diseases (Ruiz-Montero &Castillo-Rodriguez, 2016). The disruption of the harmonious functioning of the body is what leads to numerous chronic diseases associated with pain (Amarya et al., 2014; Ignasiak et al., 2017), which are more likely to occur after age 40 (Ruiz-Montero & Castillo-Rodriguez, 2016). Inclusion criteria also involved the participants being able to

watch a 15-minute YouTube video, receive an email, and participate in a video conference e-interview (i.e., access to a tablet, smart phone, or computer with a front video camera). Recruitment was limited to people living in Canada to focus on a population that has universal healthcare subsidized through levied taxes. Individuals were also required to have participated in a consistent pain management protocol for a minimum of 5 years. Exclusion criteria were based on age; that is, individuals under the age of 40 were not recruited. Participants without access to the internet and a smart device to conduct online activities (i.e., watch the Mentastics video and participate in an online virtual interview) were not recruited.

Participants were recruited via two private Facebook groups: "Surviving Chronic Pain in Canada" (893 members as of September 18, 2020) and “Pain Management” (2300 members as of September 19, 2020). Additionally, recruiting included the Mentastics Facebook study website page (found at www.christinaserpa.ca) and the researcher’s private Facebook page. A carefully formulated paragraph was posted in both Facebook groups with the research parameters to inform potential participants (Appendix B). Following advertising the study via Facebook groups, interested participants received a recruitment email with detailed information about the study (Appendix C). Participants who contacted the PI after viewing a recruitment letter received a copy of the consent form (Appendix D).

The decision to stop data collection was made when no further participants reached out after 10 social media posts over 76 days. COVID-19 resulted in significant changes to workday availability, and the researcher had difficulty recruiting additional individuals; further recruitment was not possible the decision was made to cease further

participant recruitment. Ten participants were initially interviewed, but three participants removed themselves from the study. Therefore, data from seven participants informed this study. To protect identities, participants were assigned codes from M1 to M7.

The sample size in qualitative research is smaller than in quantitative research because the researcher has to capture the detail for a rich and more in-depth analysis and understanding of meanings (Berg & Lune, 2017; Gearing, 2004). Saturation is the stage when the researcher discovers that no new concepts or ideas are possible to extract from the empirical information, i.e., interviews (Alam, 2020). Crabtree et al. (1999) proposed that in the case of homogenous informants, a sample of five to eight is sufficient, whereas, in the case of non-homogenous informants, the sample of twelve to twenty is enough. The participants in this study were homogenous in nature, and saturation was met by conducting seven interviews with the informants.

Participants

Recruited participants were all English-speaking individuals over the age of 40 (median age of 55 years) who lived in Canada. The oldest participant was 66 years old and the youngest 45. There were six female participants and one male. All individuals had been experiencing chronic pain for more than five years of time; two participants had experienced chronic pain for more than 20 years. Lower back pain was the most prevalent type of chronic pain experienced; three participants (M4, M5, and M6) named this as their primary category. Two participants (M3 and M1) mentioned joint pain as their source of constant pain. The remaining two participants experienced inflammatory arthritis and

sciatic muscle spasms. A full summary of demographic information of study participants is found in Table 1.

Table 1*:Demographic and Background Information of Participants*

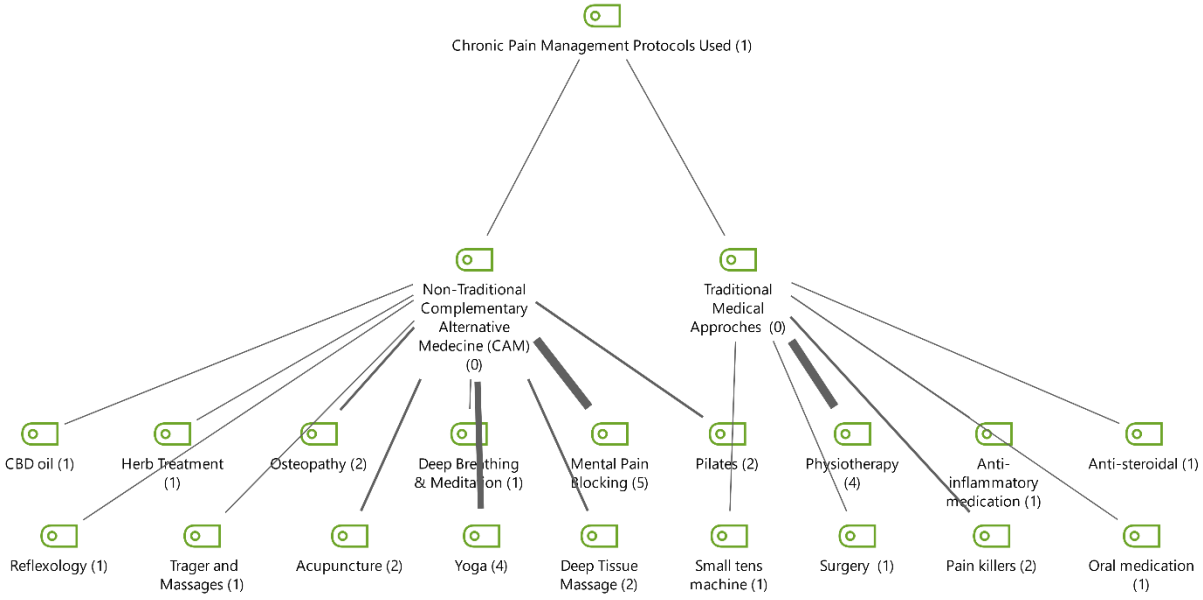
Name	Gender	Age (years)	Type of Chronic Pain	Duration of Chronic (years)
M1	Female	58	Lupus, Joint Pain	NA
M2	Male	57	Muscle Spasms, Sciatic	15 to 20 Years
M3	Female	62	Hip Pain	5 to 10 years
M4	Female	50	Lower Back Pain	15 to 20 Years
M5	Female	47	Lower Back Pain	Above 20 Years
M6	Female	66	Lower Back Pain	Above 20 Years
M7	Female	45	Inflammatory Arthritis	10 to 15 years

To be included in the study, participants needed to have participated in a consistent pain management protocol within the past five years. The participants had extensive and vast use of pain management protocols that were related to this study. Individuals had used both Complementary Alternative Medicine (CAM) techniques as well as more traditional medical approaches. The two most mentioned CAM techniques were types of mental pain blocking and yoga. The popularity of the use of yoga among the participants is not surprising as an updated search on Google Scholar on October 7, 2021, with the parameter of yoga for pain management, limited to 2021, offered over 6620 results (Appendix E for screenshot). Yoga appears to be a popular research pain management protocol and, therefore, well-accepted among individuals experiencing chronic pain. The cognitive behavioral therapy (CBT) approach has been studied and used in chronic pain management for over 30 years (Ehde et al., 2014). The label for ‘mental pain blocking’ techniques does not appear to be recognized as a search term

(Appendix F for screenshot); perhaps the label used by the participant may be referred to as a similar technique, unknown to both the researcher and the participant at this time.

Pain management also included 'Traditional Medical Approaches,' which were dominated by Physiotherapy and pharmacological interventions. This is in line with the 2019 report by The Canadian Institute for Health Information (CIHI) entitled, 'Opioid prescribing in Canada: How are practices changing?'. The CIHI's report details how Canada is on a mission to decrease opioid use and encourage more holistic and non-pharmacology types of chronic pain management. Physiotherapy in North America is considered part of the Traditional Medical Approaches (Tawiah et al., 2021). A full, more complete summary of all the pain protocols used by participants can be seen in Figure 1.

Figure 1: *Chronic Pain Management Protocols Used*



Data Collection

During the time of data collection (April to August 2021), the COVID-19 pandemic was occurring; therefore, a virtual research approach was required. Prior to the interview, participants viewed a 15-minute Mentastics video (https://christinaserpa.ca/mentastics-research-video/). The video was narrated in English, with Mentastics movements choreographed specifically for those experiencing non-malignant chronic pain.

At the beginning of the interview, the researcher reviewed the letter and the consent form to acknowledge that participants understood their rights related to the study and addressed any questions. Participants were informed that they could withdraw from the study at any time without repercussions, skip any interview questions and that any information shared would not be identified with any detail that might compromise their anonymity and privacy.

Next, participants engaged in a semi-structured e-interview (approximately 30 minutes), recorded using Stream Yard. Stream Yard is a web-based conferencing type platform, with the ability to upload and delete recordings. A qualitative approach was used to enable participants to reflect on their experiences, opinions, and perceptions concerning the Mentastics movement method and their pain management experiences. Qualitative interviewing uses recording, listening, expressing interest, and probing questions as ways to actively promote participants to reflect on their personal experiences, emotions, and insights on the subject matter (Neuman, 1997). The interview guide (Interview Questions Appendix G) consisted of three main categories based on

qualitative research and evaluation methods (Rossman & Rallis, 1998). First were background/factual questions, such as learning participants' age and sex. Next, open-ended opinion and perception questions were asked, such as, "How did you find the Mentastics video technique? What did you like? Dislike? Would you consider incorporating the Mentastics method into your pain management routine? Why or why not?" Last were summary questions such as, "Are there any questions I should have asked, but did not?"

Data Analysis Procedures

The interviews were recorded and transcribed verbatim directly after each interview concluded. Transcripts were reviewed and analyzed for patterns and themes following the thematic process detailed by Braun and Clarke (2006) while mapping it using TTM and SCT behavioral change models in the MAXQDA software program. MAXQDA is used to manage, identify patterns, code, and visualize the qualitative data. The main advantage is the abandonment of the paper and pen technique by providing easy and feasible data management and analysis tools. There are two distinct methods used for the identification of the themes or the patterns emerging from within the data (Braun & Clarke, 2006); normally referred to as an inductive or "bottom-up" approach (Frith & Gleeson, 2004), or as a theoretical or deductive or "top-down" approach (Boyatzis, 1998; Hayes & Hayes, 1997). The premise of an inductive approach is that the identified themes are the manifestation of the data as it reflects only what the data entails (Patton, 1990), further indicating that this form and approach of thematic analysis is closely linked to the grounded theory approach of research. In this approach, if the data has been collected

specifically for the research (e.g., via interview or focus group), the themes identified may bear little relation to the specific questions that were asked of the participants. They would also not be driven by the researcher's theoretical interest in the area or topic. Therefore, inductive analysis is a process of coding the data without trying to fit it into a pre-existing coding frame or the researcher's analytic preconceptions. In this sense, this form of thematic analysis is data driven. However, it is important to note that researchers cannot free themselves of their theoretical and epistemological commitments and that data not be coded in an epistemological vacuum (Braun & Clarke, 2006).

In keeping with the pragmatic paradigm, data were analyzed and coded for recurring themes, which are more "user-friendly" for participants. As such, Braun, and Clarke's six steps for thematic analysis were best for this research. First, the researcher became acquainted with the data collected by reading the transcripts multiple times and making initial assessments concerning the information gathered. Second, the researcher codes and begins general categorization of the data, looking for specific features present in the data and organizing the data in a relevant and testable fashion. The third reading of transcripts was used to start coding, and Maxqda software was used to organize and code with less bias in a systematic fashion. Coding is used for isolating notions from unprocessed data and refining them in categories of their identifies and similarities (Corbin & Strauss, 2008). The third step is the process of looking for themes so that one may organize all data related to each theme. Selective coding was used to highlight the main themes that were apparent throughout the codes found (Corbin & Strauss, 2008). Fourth, themes are reviewed to verify if the themes are appropriate in relation to the coded data excerpts and the entire collection of data. This two-level process allows a

researcher to produce a thematic map of the initial results. The fifth step is to define and label each theme. This step is extensive and is constant until the details of each theme are clear, with definitions for each theme. Codes and themes aligned with what the global data analysis depicts in relation to Behavioral Change Models. Finally, step 6 is the creation of the final report of results is the last opportunity for further analysis. The researcher extracted data examples linked to the research question and literature review.

The interview transcripts were imported into a computer-assisted qualitative data analysis software named MAXQDA. In the first stage of analysis, the researcher conducts the open coding (also known as the categories) and finally to the selection coding (also known as the themes).

Methodological Rigor

The term rigor appears to be defined by numerous words, by academic experts, such as objectivity, neutrality, reliability, replication, validity as well as enforcement of rules or protocols (Barzun & Graft, 1992; Daly, 1996; deVous, 1995; Neuman, 1997; Sarantakos, 1998). Pointing to the fact that there ought to be a systemized, ordered, and visible approach to scientific inquiry.

Qualitative research does not attempt to quantify the research data gathered in the same method as quantitative research does. Quantitative research is characterized by creating distance and objectivity in the data collection process (Bogdan & Biklen, 2007). Mathematics has offered objectivity by identifying categories and determining statistical significance in social data (Bogdan & Biklen, 2007). Yet, quantification presents problems of internal rigor regarding the appropriateness of mathematical tools and the

proper application of mathematical procedures and assurance that what is claimed to be measured can be measured using numbers (Neuman, 1997). Qualitative research often uses in-depth interviews rather than creating distance; rapport is often encouraged along with empathy (Neuman, 1997). As an interviewer, one often seeks to gain the trust to enable them to feel comfortable about articulating their opinions, feelings, thoughts, and experiences on the issues that are raised during an interview (Bogdan & Biklen, 2007). Thus, the richness of the data is based on themes and concepts difficult to mathematically quantify; therefore, the development of measures to remove the researcher's values and understandings from research findings in qualitative research is essential in obtaining a sense of rigor. In order to obtain research rigor, transcript review, a critical friend, and methodological coherence were used.

A copy of the transcript and primary analysis was sent to the participants for member checking to increase the transparency and trustworthiness of the data (Birt et al., 2016; Hagens et al., 2009). Member-checking allowed for a more accurate representation of the participants' perception and experiences of their pain management protocols, helping reduce any of the influence of researcher bias (Tong et al., 2007).

A critical friend in research is often an individual who has expertise in the research subject being undertaken, who will ask provocative questions, provide additional data to be examined, challenge the researcher, and offer information through another set of views (Loughran, 2004). The primary goal of pragmatism is to establish information that is useable to its participants; the use of a critical friend, therefore, falls in line with this objective. Involving a critical friend is seen as a chance for an open exchange of ideas and perceived truths (Bogdan & Biklen, 2007; Loughran, 2004). This concept of critical

friends in research is a catalyst for methodological rigor focusing on challenging researcher biases and opinions. According to Schuck and Russell (2005), a critical friend acts as a mirror, asking challenging questions and offering outside professional experiences; such a critical friend was used in the data analysis process of this study, my co-supervisor, Dr. Angela Loucks-Atkinson, was the critical friend.

For this purpose, two coders (principal investigator and critical friend) familiarized themselves with the interview transcripts by repeatedly reading the interview transcripts. During reading, the coders were making notes on the themes identified. To have an analytical orientation of the data, the transcripts were read keeping in view the two key points: “How does this participant make sense of their experience?” and “What assumptions do they make in interpreting their experience.” The purpose of the first point was to get familiarity with the data and identify related patterns for the research questions. The PI coded the data in the MAXQDA software, and the results were later compared and synthesized.

Methodological coherence (Morse, 1991) was ensured by following the discourse required by the pragmatic paradigm. We have discovered a problem within the realm of health promotion, very little to no affordable intervention available for individuals dealing with chronic non-malignant pain in Canada. We have established that this is a real-world problem that is both relevant and present in society by exploring the state of non-malignant chronic pain research, treatment standards, as well as individual, societal, and economic impacts in Canada within the literature review. This has therefore established that the use of a pragmatic paradigm is essential to the objective of the proposed research plan. The primary objective is to discover the thoughts and perceptions of the participants

in the use of the Mentastics self-care method, developed over 30 years ago, to help said population (Blackburn, 2003). Adhering to the use of the TTM and SCT behavior change models to develop the questions posed during the interview process and the data coding aided in maintaining coherence (Bunton et al., 2000).

CHAPTER FOUR – RESULTS AND DISCUSSION

This chapter explores, in detail, the themes and subthemes that shaped the perceptions of individuals experiencing long-term chronic pain and their openness to incorporating Mentastics into their pain management protocol. After analyzing the data, four major themes evolved from the participants' remarks: (1) Mentastics for themselves and others, (2) Mentastics is an exploration of movements, (3) Inclination towards positive feelings, (4) Mentastics adaptations. I will be discussing these themes based on previous research related to chronic pain management protocols in North America and connections to health behavior change models.

Mentastics for Themselves and Others

Mentastics for themselves and others was a theme that captured participants' perspectives about continued Mentastics use, along with their recommendations for others in chronic pain to use the technique. An openness to incorporating Mentastics and recommending it to others experiencing chronic pain was a theme in this study. This openness manifested with six individuals being extremely optimistic about the possibility of incorporating Mentastics into their chronic pain management protocol. No one stated that they were completely closed to incorporating or recommending Mentastics; only one participant (M4) answered with uncertainty by stating, "*Possibly, possibly*" to the interview question. The answers were affirmative and positive in nature ranging from very direct responses, "*Yeah. I would try it*" (M1), "*Oh, yes. Well, yes. Yes, I would absolutely*" (M5), "*Yes, I would. Yes*" (M6), "*I would like to do that, but I'm not sure I'm going to do that because I don't know how to explain that. But it's like exercises. I'm not*

able to do that each day" (M3), to highly positive comments, "*Definitely. I couldn't wait for you to finish the question to say yes*" (M7), "*Well, as a matter of fact without really even thinking about it as a specified protocol, I've been sort of doing these kinds of things on my own just as a warm-up*" (M2).

Overall, most participants indicated a willingness to recommend the Mentastics protocol to others. Following a similar trend, participant M4 was uncertain of recommending Mentastics, "*I don't know if I would recommend it since I don't know if I like it enough*." The six participants who would incorporate it into their management protocols stated they would absolutely recommend it to others. M5 went on to mention, "*I know the breathing helps a lot with pain. So, if you have techniques and if you also have techniques on how to move to release pain, I'm pretty sure I'd try,*" and M6 said '*Well, I would. I would talk about it. Yes, I would recommend it*."

Alternative non-pharmacological or CAM interventions, used singularly or combined with pharmacological methods, have been shown to be beneficial for numerous types of chronic pain but remain less used compared to drug interventions (Clauw et al., 2019). The lower use of non-drug-related interventions appears to be due to an absence of well-structured research studies, pointing towards inadequate knowledge for positive benefits (Clauw et al., 2019). Yet, in this sample, many participants were open to and currently used CAMs. The participants appeared well versed in alternative pain management techniques and their benefits (seen Figure 1 in Chapter 3), including reflexology, acupuncture, herbal treatment, and deep tissue massage. A pain management protocol was required for study participation; however, CAM pain management methods

were not an explicit inclusion criterion. Previous experience with CAMs may have increased participants' openness to Mentastics for themselves and others.

Several participants were affirmative to incorporating Mentastics into their management protocols, and only one individual expressed uncertainty concerning recommending the Mentastics protocol to others. Chronic pain treatment is concentrated on pharmacologic methods and often excludes evidence-based non-pharmacological pain treatment modalities (Becker et al., 2017). The positive perceptions of Mentastics among study participants indicates a likelihood of adopting the Mentastics movement protocols among the chronic pain population, particularly among those currently using non-pharmacological approaches and are exposed to Mentastics.

Being introduced to Mentastics (i.e., via an introductory video) may increase the likelihood of it being adopted in a pain management protocol. Mentastics is not a muscle hypertrophy exercise method; it is a movement mobility protocol. However, because individuals learn that limbs may move during a guided session, the participants in the study considered Mentastics to be a generalized “exercise” workout prior to sampling the protocol in the video. A 2019 report stated that factors affecting older adults’ adherence to moving one’s body include depression, physical fitness, and health status (Rivera-Torres et al., 2019). The report mentioned that improving adherence positively affects longevity, quality of life, and medical costs (Rivera-Torres et al., 2019). Mentastics is not dependent on one’s physical fitness or health status (Blackburn, 2003). Therefore, if Mentastics proves effective in lowering perceived chronic pain, exposure to Mentastics may aid in improving individuals' quality of life and depressive symptoms associated with musculoskeletal types of chronic pain. This occurs by offering individuals a self-care

method, via non-weight-loaded movement, reducing sedentary activity and decreasing their levels of perceived pain.

Mentastics has a high degree of mindful-based visualization techniques incorporated into its protocol (Blackburn, 2003). Researchers have found that a high degree of mindfulness, or the ability to calm and recenter own's self, decreases one's fear avoidance and fear of perceived pain (Schütze et al., 2010). Research has also pointed to a high degree of positive associations between exercise adherence and the sense of confidence in one's ability to execute the physical exercises adequately (Caetano et al., 2020), tying directly into the SCT behavioral model. Therefore, it is likely that after exposure to a personalized Mentastics session, an individual with chronic pain could continue with the self-care protocol and continue towards behavioral change because the movements are self-directed. This idea continued to be supported and manifested with the following theme. Self-confidence in physical exercises also manifest a return to habits in individuals. Meaning, if one is confident in a movement, one is more likely to have a positive attitude towards the movement. This positive attitude often creates a 'return' to the movement or protocol. (Caetano et al., 2020). Therefore, even if an individual stops a physical activity, they are positive about, a return to the physical behavior is highly likely (Caetano et al., 2020).

Mentastics - an Exploration of Movements

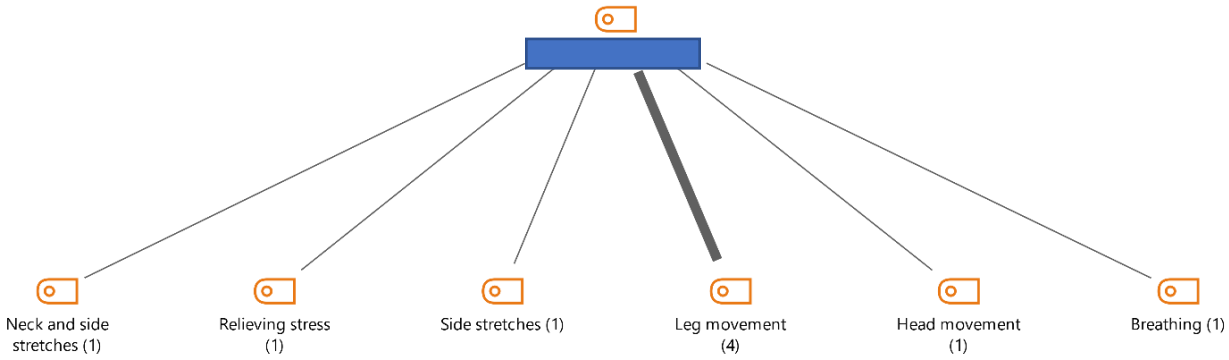
Mentastics - an exploration of movements, was a theme that described the participants' willingness to attempt Mentastics movements and explore them of their own accord and motivation. For a summary of the movements attempted, see Figure 2. A

positive outcome of exposing the participants to the Mentastics video was the openness to individual self-regulation, resulting in individuals attempting certain aspects of the video. Individuals were invited to watch and participate but were not required to do so. Six out of the seven individuals attempted movements or concepts present in the video. M7 said:

> *"I did the neck and side stretches, it felt really, really good. And once again, it didn't feel that it was a specific area, it felt that even though I chose that movement. Because I went with the move[ment], I felt like going through. I didn't feel obliged to do the whole routine. It was what was speaking to me in the moment*."

This quote is representative of the general objective of a group Mentastics protocol: to listen to one's abilities and create confidence in one's ability to decrease perceived pain (Blackburn, 2003). To move an individual into a self-maintenance phase is the aim of the TTM model and other health behavioral models for change; this appears to have the potential to occur with M7. M2 participated in two concepts: (1) side stretches: "*I very much like these side stretches where you would drop one arm to the side and just sort of flow downwards. I tried that. I tried the two arms between the legs and lowering the neck,*" and (2) reducing stress: "*That one was really good actually at relieving stress that I had*."

Figure 2: *Summary of the Mentastics Movements Attempted*



The most popular movement chosen to try was the leg movements by participants M1, M4, M5, and M6. M6 mentioned, "*I tried to target well, actually, the leg portion, they're just like moving your legs back and forth. It felt good. It's kind of, also I think touched a bit of my back, okay.*" This observation and comment demonstrated how the participant found an immediate and extended perceived benefit from one movement personally chosen by them. The participant demonstrated a quick mastery and, by default, simultaneous development of self-efficacy concerning the Mentastics movements proposed in the video. This self-efficacy is what likely aided in the positive perceptions of this study. M4 related, "*The one about the leg that you were shaking your leg and all that, I'm attracted because I did that when I was in pain.*" This thought demonstrates how some individuals who experience chronic pain, at times, may subconsciously or naturally participate in Mentastics-like movements to aid in calming their nervous systems without necessarily having a specific label for it (Blackburn, 2003). Continuing with the 'leg movement' subtheme, M1 mentioned, "*Like when you were moving your leg, and I did the same thing with my legs just to see how it would feel.*" This curiosity, which translated into an openness towards attempting a Mentastics movement, was extremely positive and

encouraging in pain management development. This participant's behavior follows the primary notions of SCT behavior, which includes skills (the ability to perform said skill), self-efficacy (the confidence that one can perform that skill), and outcome expectancies, for the result to occur from doing the behavior (McAlister et al., 2008). M1 appeared to have moved through all three concepts in a short period of time. Several participants appear to have had enough confidence in the method and their skills to attempt several movements.

Within the Mentastics video, there were several guided movements concerning the head and neck area. One such combination was the recommendation of picturing one's head as a floating balloon, weightless and adaptable to air currents. As a certified massage therapist for over 15 years, I have found that individuals are sometimes reluctant to have their head and neck area touched, moved, or manipulated. M1 said, "*I did like movements like with my head… I did. I did the breathing*." Researchers have found that cognitive/emotional preceptive factors impact chronic pain levels; the prevalence of fear-avoidance in individuals suffering from chronic neck pain keeps individuals from attempting or exploring different therapeutic methods (Cresswell et al., 2020; Ehde et al., 2014). Pain is judged as a hardwired response in the body. The experience of pain is linked to a fundamental survival incentive that pushes the individual to restore the body's health and harmony. Due to pain's evolutionary survival use, pain is a potent driving force for learning. Establishing fear-avoidance is a powerful contributor to inactivity (Vlaeyen et al., 2020). Therefore, a participant performing the Mentastics neck and head

movements is a highly positive outcome, as they are not allowing the 'fear' of movement to stop their Mentastics activity.

Fear-avoidance behavior impacts perceived chronic pain levels (Cresswell et al., 2020; Ehde et al., 2014). It has been reported that individuals who interact with patients diagnosed with chronic pain and disability should also be prepared to assess the level of fear-avoidance behavior (Gatchel et al., 2016). An awaited risk of exposure to additional pain may frequently cause an individual to have relentless alertness and checking of physical feelings of pain (Gatchel et al., 2016). This alertness may trigger a wave of physical and emotional reactions whereby even low-intensity pain sensations grow to be intolerable for the individual (Gatchel et al., 2016). Simply the expectation of one experiencing an increase in pain or even just the possibility of harm may increase avoidance behaviors, such as physical activity (Meulders, 2019). Fear-avoidance may often develop into a negative series of events, whereby anticipated fears of exposure to any pain or re-injury develop into avoiding many actions, leading to a lifestyle of sedentariness and more disability (Gatchel et al., 2016).

Since the video was only intended to expose people with chronic pain to Mentastics, movement exploration was not anticipated due to fear of the unknown (Meulders, 2019). Yet, six out of seven subjects attempted movement. M7 expressed how fear avoidance behavior was of less concern for them during the Mentastics protocol, *'... it felt releasing not only at a physical level because sometimes depending on where you are and then in my case, in my inflammatory process, the pain could be present in the body, but sometimes in the mind as well. And so, the gentle movement allows me to get in the flow of the exercise but also releasing that physical pain.'*

There was a self-directed sincerity or confidence in attempting protocols or movements from the video. Since the video was only intended to expose people with chronic pain to Mentastics, movement exploration was not anticipated due to fear of the unknown (Meulders, 2019), as proposed by participant M2 throughout their interview. However, while fear of aggravating pain has been found to inhibit exercise behaviors, other researchers have found that 'risk perception' is a minor factor in exercise protocol adherence. For example, Schwarzer et al. (2008) found that "action planning" and the development of one's self-efficacy were more successful predictors of physical rehabilitation exercise continuity among orthopedic patients (Schwarzer et al., 2008).

Movement experimentation may have been promoted as the Mentastics' movements, breathing, and visualization techniques are slightly flexible and adaptable, concentrating primarily on using gravity to accomplish nervous system release (Blackburn, 2003) with one's ability encouraged. Once participants attempted the protocol of their own accord, confidence in performing it may have developed. Confidence in one's abilities can decrease the negative influence that fear-avoidance behavior has on pursuing a specific action (Ehde et al., 2014). Being able to do the Mentastics protocol confidently and commenting on how they could implement it into their life may have increased their openness to adopting Mentastics into their self-care pain management routine. Chronic pain intervention research has found that modifications to one's behavior and state of thinking to a healthier and more personalized method may improve a patient's quality of life and self-efficacy (Uyeshiro Simon & Collins, 2017).

The goal of Mentastics, via its self-care approach, is to modify one's behavior and perceived physical sensation for the betterment of one's quality of life. (Blackburn, 2003). Researchers have found that the development of self-efficacy in patients with chronic lower back pain led to quick improvements in functional mobility for open and willing patients, more so than simply enforcing a rehabilitation system (van Hooff et al., 2021). Since this study's participants demonstrated openness and rapid confidence towards the Mentastics protocols, continued use and exposure to Mentastics may improve a person's mobility and self-efficacy simultaneously.

Inclination Towards Positive Perceptions

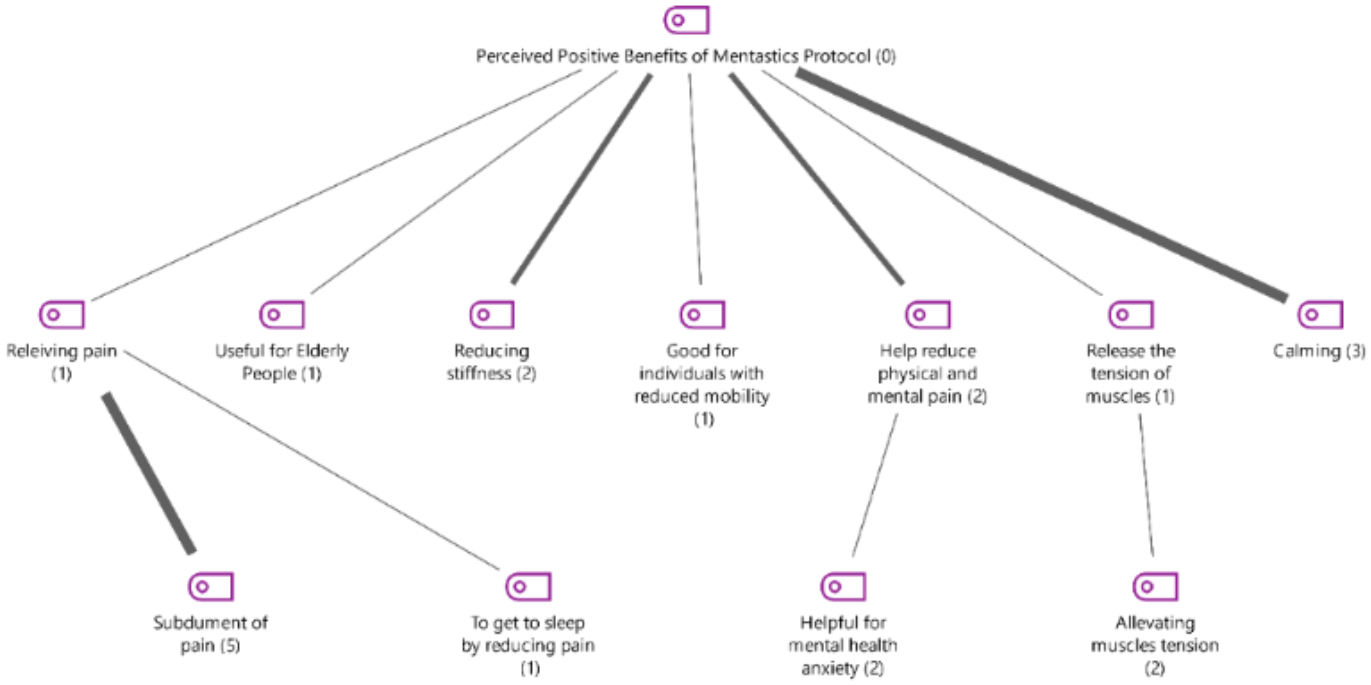
Inclination towards positive perceptions was a theme that emerged from the data concerning participants' perspectives of the Mentastics protocol. This theme emerged since all the comments and opinions were positive in nature. A summary of the benefits described by participants is found in Figure 3: (1) five participants mentioned subdued pain as a benefit of incorporating Mentastics into a pain management protocol, (2) three participants stated the calming, with (3) two individuals mentioning the possible benefits for those with mental health issues. Although categories appear numerous, they are all positive in nature. They appear to be linked to either physical or mental pain spheres and are perceived as suitable for individuals with less mobility and higher incidences of chronic illness. M2 is quoted as saying:

> *The movements that you did in the video, I think would be really good for people that are in a lot of pain or who are mobility reduced, I think elderly*

people would benefit from something like that as well. I'm thinking my mom would love it.

Mentastics for older adults and those with reduced mobility align with some recent research findings. The gentle dynamic type of stretching is more effective for elderly individuals at an increased range of motion versus static stretching methods (Zhou et al., 2019).

Figure 3: *Perceived Positive Benefits*



Participant M3 commented that *"The first [time] I looked [at] the video, my hips were in crisis. And I tried the movement and it make[s it] relaxation for me, then after the video, it was less painful [the hips*]." It has been documented that certain meditative relaxation systems can decrease the emotional elements of pain (Hussain & Said, 2019).

These non-pharmacological relaxation methods have also been found to help improve the management of negative thought patterns (Hussain & Said, 2019). When individuals can better control their negative thought patterns, they can develop a better sense of emotional stability (Hussain & Said, 2019). Negative thought pattern control has also been found to aid in perceiving a decrease in pain, alleviate lethargy, and encourage a more stable and recuperative sleep pattern (Hussain & Said, 2019). Since the Mentastics protocol is part of the TPI method, it is a holistic system with a self-care approach (Blackburn, 2003). This holistic self-care protocol allows the TPI method to be labelled as an integrative therapeutic system (Blackburn, 2003). The mindful meditation and visualization techniques used in the Mentastics method are based on more traditional techniques, specifically mindful-based meditation, which has been studied (Blackburn, 2003). These mediation methods have been found to have better treatment results (compared to stand-alone pharmacological interventions) and offer an improvement in conditions resulting from the constant aspect of dealing with chronic pain, such as anxiety and depression (Majeed et al., 2019). An additional comment made by M1 also supported these findings:

> *You know, but for people that—I also have anxiety, it's probably good too, because it's very calming. So, it's chronic pain, and also like it's probably good for mental health too because I felt like getting much calmer after.*

It has been demonstrated that mindfulness-based meditation has positive benefits on reducing depressive symptoms, and its positive outcomes can be effective for up to 6 months or more at a time (Saeed et al., 2019).

M2 went on to state the following,

I believe that just from my short experience, I think that some of the muscle tension that I carry around that is extraneous to where I have my chronic pain. Because there are muscles that are balancing out other things to alleviate the stress on my lower back, so that definitely in a very short time did help with those.

In essence, he is stating that a sensation of release occurred quickly by having executed some of the Mentastics movements that surrounded his lower back muscles. Research has found that patients with lower back pain have reduced core muscle symmetry, which translates to the postural muscles in the trunk area being at times too weak or too strong for the required action or posture (Emami et al., 2018); thus, individuals that do not have proper muscular control and development often experience lower back pain. Doing dynamic stretch-like movements, as previously stated, may aid in improving range of motion and, therefore, muscular geometry (Zhou et al., 2019).

The M1 participant said:

I do, like, meditate and I have pain at night, that's when I do the most. When I lie in bed, I do the meditation and then I feel that it calms my system down, and helps me sleep, and helps me like I'm not as conscious of the pain. It subdues the pain.

Research has suggested that progressive relaxation meditation techniques may benefit individuals in managing chronic pain (Chen & Francis, 2010). Participant M2 also went on to mention that the concept of working with gravity and body weight was pleasant:

Actually, I found it was really interesting that idea of just letting gravity do the work for you rather than, you know; normally, when I do stretches

from running or so on, I'll physically pull myself towards where I'm trying to stretch and it's hard. And in some cases, especially on legs, you feel that as being it's painful. But just letting gravity pull you and doing very slow gentle movements was a good way to release the tension in a lot of muscles, even over just a short period.

Researchers have stated that stretching to the point of experiencing extreme to medium pain has no advantages over stretching to the point of gentle discomfort or simple release (Muanjai et al., 2017). A gentle stretch is especially important considering the fear of doing movement experienced by many people with chronic pain. Research has found that avoidance behavior is often the actual cause of individuals not pursuing a treatment protocol (Meulders, 2020). Though it is not always possible to eliminate chronic pain, many participants appeared open to change and may benefit from learning and incorporating skills such as Mentastics. Mentastics may enhance the level of one's quality of life because it may aid in the reduction of discomfort and disability (Blackburn, 2003). It might be a method worth exposing more individuals to as a general physical health activity since it is very adaptable in terms of amplitude/motion and level of exertion/intensity (Blackburn, 2003).

The nature of using gravity and one's own "feeling" of the movements (the basis for Mentastics movements), versus having individuals imitate the therapist (or instructor), may have aided in the development of such high levels of positive perceptions by the subjects. Mentastics is a CAM categorized as active movement education (AME) (Blackburn, 2003), which may be defined as non-weight loaded exercise movement combinations (Slade & Keating, 2007) similar to certain types of yoga, tai-chi, and dance

therapy. For AME, the muscular system is not overloaded to increase its size and induce hypertrophy but simply activated to boost circulation. Researchers have discovered that AME has comparable benefits for pain management treatment to more traditional exercises such as weight-intensive strengthening and high-intensity stabilization (Field et al., 2003; Slade & Keating, 2007; Steihaug). Although AME does not seek to cause muscular hypertrophy, it does follow research definitions of gentle, low-impact exercise protocols (Blackburn, 2003). Exercise is considered a subgroup of physical activity. Exercise, by definition, must be organized, coordinated, slightly repetitive, and done for a focused goal for the progress or maintenance of one or more elements of physical fitness (Dasso, 2019). A component of physical fitness is mobility (Dasso, 2019) and Mentastics seeks to improve or maintain mobility (Blackburn, 2003). Therefore, Mentastics is a subset of exercise and AME.

Mentastics seeks to support sensing the pain and attempting to engage around it, developing strategies for moving with confidence and without pain (Blackburn, 2003). Therefore, these principles can support awareness for both the physical self and one's emotional connection to our physical abilities versus limitations. It concentrates on the positive versus the negative -- meaning seeking to develop what one can do versus what one should not or cannot do. Mentastics explores pain perception as an adaptable movement pattern versus a constricted or limited one (Blackburn, 2003). This knowledge and skill can help the development of self-care strategies to alleviate pain. This concept may allow a participant to have a more positive outlook upon the Mentastics movements (Meehan & Carter, 2021).

Study participants perceived benefits of the Mentastics protocol, including expressing perceptions that it could help reduce pain in mental and physical realms. Other perceptions included that Mentastics would likely be beneficial for elderly people, help reduce stiffness in those with reduced mobility, help with anxiety, and offer a calming effect. Research has reported that activity programs should concentrate on aiding participants in integrating the protocols into their "view of themselves" or identity, not just their routine, in a flexible and supportive way (Guérin et al., 2019). The research video was not created to be individualized or for therapeutic rehabilitation. The video did follow the Mentastics practices using meditative-type visual meditative guidance, allowing gravity to do the work, concentrating on the "feeling" of lightness versus the manifestation of a specific range of motion or muscular contraction (Blackburn, 2003). The Mentastics concepts of mindfulness are more easily manipulated and adapted for individuals dealing with chronic pain when a certified Mentastics therapist guides an individual and personalized session (Blackburn, 2003). Mentastics is dynamic and gentle but also self-regulatory in nature. The self-regulatory aspect of the protocol is ideal for individuals' that fluctuate from acute to latent chronic pain, as Mentastics is particularly adaptable due to its focus on the nervous systems' sensations versus accomplishing a specific range of motion or movement (Blackburn, 2003). A certified Mentastics practitioner can guide an individual towards more self-inquiry and movement acceptances. Accepting one's state of being in the present moment and seeking more of a 'lightness' in one's state (both in mind and body) allows an adapted degree of movement for each individual (Blackburn, 2003). This Mentastics philosophy of performing the movements in a caring and flexible way (Guérin et al., 2019) may allow easier integration

of movement exploration, create a faster development of self-efficacy (versus traditional cardiovascular and muscular contraction type exercise prescriptions), and create an integration into the self. Future research is needed to explore if the Mentastics protocol can achieve these outcomes.

Mentastics Adaptations

Mentastics adaptations was a theme that arose from participants' comments concerning suggestions and recommendations for changes in positions or methodology for others in chronic pain. Two subthemes that emerged from the data were (1) *suggested changes to the Mentastics video developed for the study* and (2) *the feasibility of an online Mentastics chronic pain management protocol*.

Participants provided three specific recommendations to the Mentastics protocol: (1) offer the protocol lying down, (2) use accessories of pillows during the recommendations, and (3) create a going to sleep (before bed) protocol. These recommendations were discussed primarily by participants M1 (*"Maybe could you do it also lying down?"*) and M2 (*"by some pillows on a bed"*). It should be noted that these suggestions are viable and already part of the Mentastics protocol (Blackburn, 2003). Mentastics can be done lying down and/or using aids and accessories (Blackburn, 2003). M2 went on to comment:

> *'The video showed you sitting throughout the video and that's fine if you can sit. But there was a time when my lower back pain was such that I would not have been able to sit, even for 10 or 15 minutes. I would have like needed to do it on the floor or bed. Or something like that.*

The Mentastics method, which contains a manual manipulation method, by a certified practitioner, on a client, often lying down on a massage table (Blackburn, 2003) which is replicated in the Mentastics repertoire. M1, who had explicitly recommended a lying down protocol also mentioned, stated: "*[The video] was very soothing, very calming, and well especially now I can't do too much with since my hip replacement, so it's more my speed, just moving and breathing and just light flowing movements.* Mentastics consists of self-release massage movements combined with mindfulness meditation (Blackburn, 2003). In Mentastics, as in massage therapy, many types of accessories may be utilized to allow a participant to have the most effective experience (Saunders, 2019). M2 specifically asked for something to help them support some of the movements: "*But for me, when I was trying it, I needed more support. So, it would have been interesting to see like full elbows out on the legs giving support then a little less support or no support."* Some massage pillows could have been used during specific movements during the Mentastics video, as is likely done during a table massage session.

There does not appear to be a documented Mentastics or TPI protocol specifically created to aid individuals to fall asleep (Blackburn, 2003). Although Trager massage was not directly studied, the back massage technique was found to be effective in congestive cardiac failure patients, whereby the quality and duration of their sleep improved (Sable et al., 2017). Research also found that a 10-minute back massage can improve sleep quality and sleeping time among intensive care unit patients (Hsu et al., 2019). Mindfulness meditation has been found to enhance sleep quality in numerous clinical categories affected by sleep troubles (Rusch et al., 2019). M7 mentioned, "*that sensation and that feeling in the body that's how [it was] very good. But I feel my conflict was that I*

wanted to close my eyes and drift." A recent study found that individuals using a mindfulness meditation mobile application preferred to meditate at night (52% of sessions), and even though participants used general meditations rather than sleep-developed type meditations, improvements in sleep outcomes were documented (Huberty et al., 2021). The 'drifting' sensation that M7 experienced is often associated with a relaxation/sleep routine (Huberty et al., 2021). M1 said: *"I do like meditate when I have pain at night, that's when I do the most"* aligning with the research findings above. With the combination of meditation and self-release techniques, individuals are likely to use Mentastics before bed because it is 'calming' (Blackburn, 2003), without necessarily creating a 'going to sleep protocol'- as M7 mentioned. M1 also said, *"It was very soothing, very calming and well especially now I can't do too much*." Although, individuals may require different areas of the body to relax or different mental visualization techniques to fall asleep. As found in the 2021 mobile application study, participants may use general mindfulness meditation to obtain their desired results (Huberty et al., 2021). This points to multiple options within the Mentastics protocol for personalization to be developed.

M2 related "*but at the same time using the auto-suggestive techniques I've learned in self-hypnosis."* Mentastics, by design, is a multi-modal approach with movements, visualizations, and mindfulness (Blackburn, 2003). This repertoire can be used to self-release in numerous positions (e.g., sitting, standing, lying down, supported by accessories or aids) and for calming or relaxation purposes (Blackburn, 2003). However, most therapists seek to adapt the movements or sensations to the client versus the client adapting to the movement with accessories (Blackburn, 2003). Therefore, adaptations

requested by clients will always be likely to be fulfilled. It might be a method worth exposing more individuals to as a general physical health activity because it is very adjustable in the range of amplitude and level of execution (Blackburn, 2003).

AME approaches often echo some of the recommended steps and skill development in chronic pain self-care management protocols (Dragon, 2015), such as developing a sense of one's form via self-awareness and developing one's ability to move with or without muscular flexion (Blackburn, 2003). The Mentastics practice is founded on attention to each person's present, subjective experience and can explore creative modes of exploring movement experiences, even during acute flares pain (Blackburn, 2003). Central to Mentastics is the notion of movement explorations and self-governance, which is underpinned by the desire to take ownership of one's movement experiences (Blackburn, 2003); this is akin to self-management concepts in chronic pain (Dragon, 2015). Encouraging an approach that aids in developing a sense of self-efficacy also echoes the concept that people with chronic pain should be dynamic creators of their holistic health protocols, meaning that they are more than simply their chronic symptoms or medical diagnosis (Dragon, 2015). Therefore, Mentastics is, by nature, adaptable and flexible and seeks to reflect an effortless and mindful state of movement (Blackburn, 2003).

This research occurred during the Coronavirus (COVID-19) pandemic, which has resulted in a higher acceptance of virtual types of health care and health promotion practices (Webster, 2020). Many health systems worldwide are looking to adopt virtualized treatment approaches that help eliminate or decrease the need for physical

meetings between patients and health providers (Webster, 2020). This was expressed by M1:

> *Right. Yeah, in a group would be good. Or like I prefer to be in-person, but due to COVID, it's understandable that you can't, because it doesn't have the same effect. You know, when I was watching you, and then doing it, so I'm not as relaxed as if like in yoga she would tell us what to do and I knew the move so it would just flow better. So, I would probably prefer in person, whether it's in a group or one-on-one rather than doing it through a video.*

Although a virtual environment was accepted, participants expressed that a more individualized and live approach was considered ideal versus a pre-recorded video. Virtual groups offer potential advantages for participant diversity and reach less healthy populations, making them ideal for the chronic pain population (Rupert et al., 2017). Virtual groups do not necessarily appear to cost less than live or in-person group therapy sessions (Birnie et al., 2021). Decreasing pain management costs was an objective of this study, to decrease the cost by exposing an individual to the self-care protocol of Mentastics via a pre-recorded video series. M2 offered a type of hybrid solution that could help decrease the need to always be treated in a more expensive live format.

> *So, I like the idea of doing it one-on-one, and then from there using video recorded for part of the work and then repeating online via webcam or having a live one-on-one session with weekly or bi-weekly instruction. So, I like both. I like a mix of both, usually starting with them one-on-one.*

An openness to virtual one-on-one instruction in combination with pre-recorded videos to maintain a continued routine was found during the study. M7 related that when they are in an acute phase of pain, they would prefer online, live sessions versus in-person:

> *I feel very comfortable on a one-on-one setting, especially if it's someone that I know…. if I didn't know the instructor, I wouldn't want to be face to face with a person I don't know in a situation in which I feel very vulnerable and which I'm experiencing a lot of pain. And if I have been experiencing physical pain for a lot of days, then that's mentally also affected, why would I want to be with someone. So, I think that having that online will be very beneficial for those cases.*

Before the COVID-19 pandemic, the fields of telemedicine, virtual healthcare, or eHealth techniques were employed in a less focused manner in North America (Badalato et al., 2020). Telemedicine techniques often use telephone calls and video conferencing software for virtual medical visits and use smartphone applications in health (Moo et al., 2020; Zachrison et al., 2020). These methods were being tested slowly and steadily, and research concentrated on what was learned and difficulties observed in incorporating digital health technologies (Badalato et al., 2020; Moo et al., 2020; Zachrison et al., 2020).

M7's quote above relates to the advantage of a virtual live meeting, including the ability to be in a vulnerable state of chronic pain and still be open to a Mentastics session due to a sense of feeling safer behind the camera. This description aligns with a study of older adults experiencing chronic pain, which demonstrated a strong openness of using eHealth for the future care of individuals with chronic pain (Currie et al., 2015).

Nonetheless, older adults emphasized that they wanted eHealth protocols to be delivered in conjunction with in-person or live visits from health professionals (Currie et al., 2015). M2 expressed their preference for one-on-one sessions in general, either virtual or in-person, but live:

> *Well, I find for myself that I get the most benefit when my initial contact with a trainer of a physiotherapist or a Pilates instructor or anything in exercise science is to have a one-on-one to explain the motions to get the technique right rather than just trying it on my own in the shower without doing the right thing, because who knows if I'm hurting myself more than helping myself.*

This comment also relates to Currie et al.'s (2015) study of older adults experiencing chronic pain openness of using eHealth, with an acceptance of using Mentastics when in contact with an individual 'live' with the ability to continue with hybrid eHealth types of technologies. A qualitative study reported that the accessibility, personalization, and ease of use of a virtual health intervention is as essential for adherence and continuity as the content development of the said intervention (Solem et al., 2019). The chronic pain participants in Solem et al.'s (2019) study stated that an ideal eHealth method could be used for support and, at times, simply a distraction from the pain, no matter the pain intensity, time of day, or situation.

Although participants expressed potential for a virtual or eHealth delivery of Mentastics, the pre-made video delivery method chosen would likely not be adopted easily. M2 expressed two important points related to the lack of personalization of a pre-recorded Mentastics protocol:

Right. I don't like the idea of just taking something that's pre-canned for a million people and doing what's on that, everything that's on that. You know, I keep thinking of p90x or insanity and loved like four out of the six exercises and two of the exercises if I had tried them, they would have killed me. ..... So, I don't want to try something that's going to be bad for me. So, I kind of like the idea of getting the instruction. Especially if yourself as the instructor is giving the original instruction and doing the video, then you can tell me do exercises A B C F G, and H, but don't do D and E which you'll see in the video that I made for a million people. That way I go okay, those are the two I have to skip or how I have to modify them, rather than starting with a video trying everything and then not benefiting.

Comparing the pre-recorded video Mentastics protocol to a popular workout type video suggests that the participant feared attempting a movement that could physically hinder them. This type of latent 'fear' appears to be an underpinning for the preference of live sessions; with live sessions, participants feel as if they would receive a safer and more customized session, decreasing the likelihood of higher pain intensity resulting from the protocol. According to participants' comments in this study, a generalized video for a specific type of chronic pain session is less likely to be adhered to (Larsson et al., 2016).

The participants had specific preferences regarding Mentastics delivery method, which was 'live' and 'personalized' as much as possible. Offering Mentastics sessions in a live, real-time, small group virtually or in-person was a recurring recommendation by participants. Pre-recorded sessions were seen as ineffective due to an inability to interact

with the Mentastics practitioner and immediately have more guidance and personalization. Having access to a practitioner would mean interacting with them not only through a virtual method but perhaps via telephone or live, in-person. In essence, a personalized type of participant service and adaptation would be ideal for acceptability and adherence of Mentastics into one's pain management protocol. Previous research stated that users' (patients') input in developing eHealth interventions is an essential step toward developing profound and effective interventions for chronic pain patients (Solem et al., 2019). Although this study's primary goal was information concerning the Mentastics method and subjects' perceptions, it explored potential delivery methods to evaluate the likelihood of pain management adherence. It is also important to assess and gain specific new insights into virtual group interviewing methodology with vulnerable populations and their concerns to encourage online health sessions during COVID-19 and beyond (Dodds & Hess, 2020).

The study's video presentation was created to expose individuals to the Mentastics protocol. It was 15 minutes in length and was developed to offer a self-guided visual and auditory experience of what Mentastics movements are. It was not developed for a specific "type" of chronic pain or experience. The researcher created the video in an amateur fashion, not to commercialize the method but to expose the participants to the protocol with as little manipulation as possible. The research video was created more as an exposure tool for the study and therefore lacked many finishing and transitory elements to offer a more professional experience. The video length was also chosen to encourage individuals to view the video entirely and facilitate participant recruitment. With a lower time, commitment, it has been found that people's attention and willingness

to participate increases (Guo et al., 2014). Participants were asked to provide feedback on the study's Mentastics video. These suggestions primarily came from participant M2, who has skills in filming and photography, allowing them to have very constructive suggestions on creating a video that could be used for professional purposes. No other participants offered direct feedback or comments concerning the research video's quality or format.

The first suggestion was to provide a disclaimer at the beginning of the video concerning not only adaptations but that the instructor and organization are not liable in the case of incorrect movements chosen or executed. M2 went on to mention:

> *The only thing I would think is at the beginning, maybe before watching the video, you might want to ask the person if they're mobility restricted or if there are any motions that they can't do. Just because although the motions in the Mentastics video were incredibly minimalist, I kept thinking well, what happens if the person had a particular handicap, and that type of motion wouldn't be possible?*

This suggestion mentions the development of a more detailed video description for any video created so that a person with a specific type of mobility restriction could better navigate whether to execute the Mentastics video or not. They stressed not only providing disclaimers throughout the video but also offering visual examples of the modification and movement alternatives. A written description of modifications should also follow the modifications in the video; for example, if the video were posted on YouTube, further details could be provided in the video description box. M2 goes on to further explain the modifications he is suggesting:

For instance, your video showed you sitting throughout the video and that's fine if you can sit. But there was a time when my lower back pain was such that I would not have been able to sit, even for 10 or 15 minutes.

Therefore, had the participant been in a level of extremely acute chronic pain, he would not have been able to follow the visuals in the video. Therefore, a side-cut screen video of an alternative position (e.g., standing or lying down) would have been ideal.

The concept of developing longer videos or sessions specifically for targeted areas of the body was suggested. M2 stated:

So yeah, because like if we had one where it was specifically targeting shoulders and neck, that would be great. Like we did everything from legs to trunk to upper back, shoulders, I felt there was, you know. So that was like going through, but that was 15 minutes of at least four major body groups, and I would have liked to have seen 15-20 minutes just focusing on like upper shoulders and neck, or you know.

According to this individual, the non-specificity of the video was not ideal for long-term exposure or 'follow along.' This is understandable if one looks at Mentastics from the perspective of an 'exercise' versus 'movement' intervention type program. There are numerous research interventions for lower back pain treatment, which tend to have longer requirements for their movement protocols. For example, a Hatha yoga research study for low back pain, which provided a decrease in pain measured in participants, used 35-minute, weekly yoga group sessions over a total of six sessions to offer these types of results (Neyaz et al., 2019). An additional study had participants execute over ten core stabilization exercises to reduce pain, taking more than 15 minutes to complete over

several intervention weeks (Akhtar et al., 2017). The 15-min Mentastics research video created for this study is likely inadequate in length compared to other effective movement therapy interventions.

The specific nature of the effectiveness of the core intervention study shows that targeting a specific body area may be more effective versus a more global therapeutic approach. This concept correlates to the last constructive comment by M2, *'are we going to see the longer video with about half an hour to 40 minutes?'*. In the form of a comment, this question is important because the length of intervention appears correlated to benefits in recent studies.

During the lockdown period, a swift move occurred toward virtual telehealth activities in practices (Imlach et al., 2020). Clients prefer to have the options of session type to fit their requirements and conditions (Imlach et al., 2020). Technological concerns may need to be tackled, and better interaction and clarity are required for both health practitioners and clients (Imlach et al., 2020). Therefore, exposure to the Mentastics should be in various adapted formats in order to encourage self-mastery (self-efficacy), allowing for full integration of a positive health behavior modification into one's lifestyle (Guérin et al., 2019). This is especially true post-pandemic, once a wider set of health delivery options will likely once again be available. A 2021 study found that even Physicians strongly approve the use of multidisciplinary-multimodal approaches to achieve an effective pain management protocol that addresses pain and aids in the development of improved physical mobility (Varrassi et al., 2021).

CHAPTER FIVE – GENERAL DISCUSSION

This chapter discusses the study results in relation to health behavior change models. I will be discussing influences on the study, Mentastics protocol recommendations for its ideal application, and recommendations for future Mentastics research.

Behavioral Change Models in Health

The TTM analyzes barriers to adopting positive lifestyle habits and offers alternatives to overcome them (Bunton et al., 2000). The five stages included are: *pre-contemplation, contemplation, preparation, action, and maintenance* (Prochaska & DiClemente, 1983). The second step of the model, contemplation, was used to assess and categorize the data into themes. The data reveals individuals watched and engaged in the Mentastics example video, even though they were not explicitly required or asked to do so. Study participants were already in the contemplation step when they agreed to participate in the study. The preparation phase occurred during the interview scheduling period, and the action phase occurred during the viewing and actual 'movement' participation. Five participants felt comfortable completing a specific part of the video, with the chosen video segment being slightly varied for each participant's chronic pain condition. The action phase in the TTM model likely occurred for those five individuals who chose to participate (Prochaska & DiClemente, 1983). This voluntary participation in the Mentastics movements is extremely positive and increases the likelihood of Mentastics adoption and perhaps moving through the behavioral model towards the maintenance phase (Prochaska & DiClemente, 1983).

The maintenance phase cannot be ascertained within the scope of this study. There is a likelihood that, with more exposure to a personalized Mentastics protocol, the maintenance phase of the TTM model could be reached. Participants exhibited a positive attitude towards being open to incorporating the protocol and stated an intention towards the continuation of use of the research video, suggesting some likelihood of moving from action to maintenance phase. The comments of seeking out additional Trager MD Mentastics protocols personalized to themselves is a characteristic of the TTM model (Prochaska & DiClemente, 1983). Within the TTM, individuals may move forward, and at times backward, within the steps to adapt behavior for proper maintenance (Prochaska & DiClemente, 1983). An example of this may be when an individual can no longer participate in a specific scheduled group yoga class. The yoga participant may seek to adapt their behavior to continue participation in said yoga style via a different class time, format, or style. An example of this within the scope of this study is when individuals attempted the research Mentastics video but then asked the researcher if modifications were possible, returning to the step of contemplation (Prochaska & DiClemente, 1983). Kerns and Rosenberg (2000) conducted a study using the 'Pain Stages of Change Questionnaire' (PSOCQ) to gauge the willingness to implement a pain management protocol (i.e., self-care approaches) to cope with chronic pain using the TTM steps of precontemplation, contemplation, action, and maintenance (Kerns & Rosenberg, 2000). The study suggested that high commitment levels to a chronic pain self-care pain management protocol may facilitate obtaining positive therapeutic outcomes (Kerns & Rosenberg, 2000).

This research on high-commitment levels and chronic pain management protocols establishes the importance of the TTM stages of change model for chronic pain self-care protocols. The current Mentastics study primarily sought to discover the participants' perceptions to discover their possible openness and commitment level to the Mentastics movement concept/protocol. An openness to watch the video (contemplation) and the attempted movements in the video (action phase) may lead to the adoption of a Mentastics protocol, with modifications, due to the higher commitment levels of these study participants, in contrast to individuals who do not have a stable pain management protocol (Kerns & Rosenberg, 2000). In the current study, participants' higher commitment levels are likely due to the groups' adherence to existing pain management protocols (Kerns & Rosenberg, 2000), as seen in Figure 1. This demonstrates that the study findings align with TTM behavioral model's characteristics.

The data is also in concert with SCT. The SCT postulates that behavior is formulated by aspects of the environment and the participant, balanced within a type of behavioral ecosphere (McAlister et al., 2008). SCT includes skills (the ability to perform said skill), self-efficacy (the confidence that one can perform that skill), and outcome expectancies for the behavior to occur successfully (McAlister et al., 2008). Research has found that when individuals do not adopt healthy behaviors, they expect to receive low levels of improvement in their chronic pain symptoms (22-26% improvement) (Anderson et al., 2016). However, if individuals expect that a health behavior has a significant positive outcome (47-54% improvement in chronic pain symptoms), individuals will commit to participating actively in the health behaviors (Anderson et al., 2016). Participants perceived to associate the highest level of symptom relief from relaxation and

low-intensity type activities (Anderson et al., 2016). This theoretical association between relaxation-type activities and high levels of symptom relief is likely manifested in the Mentastics study perceptions. The study participants associated Mentastics with relaxation or a “calming” effect (Figure 3).

The results herein can be integrated and assessed with the SCT behavioral model. The likelihood that participants would incorporate a Mentastics protocol into their pain management protocol is high for three reasons. First, most participants tried aspects of the Mentastics video, displaying confidence in the ability to perform the protocol. Second, most participants (six out of seven) indicated they would incorporate the protocol into their current pain management. The participants' positive perceived benefits were numerous, and therefore outcome expectations are likely to result in a Mentastics protocol exploration.

Study Influences

In this section, I discuss four influences of this study: (1) the influence of COVID-19, (2) the sample, (3) the official languages in Canada, and (4) social media. One of the most significant limitations was the COVID-19 pandemic because it required a significant redesign of the preliminary study design from a quantitative format to a qualitative one and around data collection. The redesign created some technological impediments to data collection and participant recruitment.

COVID-19

Due to the COVID-19 pandemic, the study had to be conducted 100% virtually. The provincial government of Quebec initiated healthcare restrictions whereby only

essential healthcare practices were allowed to occur in person. This removed the ability to offer most if not all activities, with social contact within the government long-term homes, gyms, or community centers to be restricted or canceled. The restrictions also included the researcher no longer having permission to enter Quebec's long-term health placement homes or hospitals. This resulted in redesigning the study design to recruit chronic pain participants virtually and offer interviews virtually, which created challenges, enumerated below. Additionally, Memorial University of Newfoundland (MUN) banned in-person data collection during this time.

The official languages in Canada

This study excluded non-English speakers. Only offering the video and interview in English may have reduced the participation rate from primarily French-speaking Canadians. This is particularly relevant as the study was conducted in Quebec, the principal investigator's home province.

Social media recruitment and virtual interviews

Dodds and Hess (2020) outlined three primary limitations of virtual interviews in research being adapted during COVID-19. The limitations were (1) a deficiency in one's ability to access non-verbal communication, (2) inadequate technological arrangement, and (3) confidentiality issues [such as posting advertisements directly on Facebook] (Dodds & Hess, 2020). All these limitations were experienced during this study.

Recruitment was initiated via the Facebook platform and its virtual chronic pain support groups. The Facebook platform was chosen because it had the highest percentage of daily users at approximately 79% of Canadians (Gruzd et al., 2017). The virtual

platform had some negative consequences. Participants were likely not to follow directions in advertisements, emails, and at times, interviews. The advertisement received 2300 impressions or clicks (Appendix H), and 45 initial emails were received. Individuals did not follow instructions stated in the Facebook advertisement; they would often comment on the advertisement to express their interest rather than send an email (Appendix I), which was not in line with ethics protocol. Approximately 45 emails were sent out to potential participants; 30 of these individuals did not reply, with15 individuals returning responses. The need to recruit virtually created several issues. Interviews had to be rescheduled often due to low internet bandwidth as well as technological difficulties. The conversations with participants resulted in shorter answers, and some participants opted to interview with their cameras off, resulting in less human connection. This made the interviews more restricted and tedious. The shorter answers provided made it more challenging to do an in-depth analysis of the Mentastics protocol. Lastly, having only the ability to conduct virtual interviews likely reduced the age of participants. I had originally intended to recruit older adults. The oldest participant was 66 years of age; the younger age of participants decreases the ability to relate study findings to those 65 and older in Canada. Future research should attempt to have in-person interviews with targeted populations sampled and among populations who do not have access to specific branches of technology used within the parameters of this study.

The Sample

The fact that fewer men adopt social media platforms may account for fewer male participants recruited. Gruzd et al. (2017) wrote a study on the state of social media use in

Canada and reported the following: (1) Facebook had the highest percentage of social media daily users at approximately 79% of Canadians; (2) over 50% of people aged 55 years and old use Facebook, which is the only social media platform to achieve that level of usage in this age demographic (the primary reasoning for using Facebook as the recruitment platform); and (3) females appear to use most social media platforms in higher percentages in comparison to their male counterparts. The study participants were primarily women (6 out of 7 people), which was not my intended goal. I originally wanted perceptions to come equally from both males and females. Research has found that women's perceived pain intensity and anxiety scores are drastically higher than men's scores (Ramírez-Maestre & Esteve, 2014). Additionally, a higher tendency for fear-avoidance is associated with high pain scores in men but not women (Ramírez-Maestre & Esteve, 2014). Fear-avoidance is associated with a reluctance to seek mental therapy and support (Ramírez-Maestre & Esteve, 2014). As men are less likely to seek therapeutic mental support, men may also be less likely to participate in Facebook chronic pain social support groups.

Recommendations for Massage Practitioners in the Field of Chronic Pain Management

The results of this study can guide practitioners of complementary medicine (e.g., recreation therapists and massage therapists) who aid in the development of holistic pain management protocols (for those dealing with chronic pain in Canada). Recommendations are made from the study results and drawing from my experience as a Certified Massage Trager Therapist. These recommendations are also made with

consideration of a consensus statement on caring for patients with pain during the COVID-19 pandemic that advocated for holistic, multifaceted self-care programs as much as possible for those experiencing chronic pain (Shanthanna et al., 2020). The multifaceted self-care programs encompass movement, sleep quality, stability, self-regulation, and overall lifestyle habits (Shanthanna et al., 2020). Furthermore, the 2018 Veterans Health Administration also noted that the many factors that contribute to chronic pain must be approached holistically and include the ability to increase the participants' self-efficacy (Kligler et al., 2018).

First, it is recommended that national certifying Trager associations, in conjunction with the International Trager association, develop partnerships with chronic pain clinics. This relationship would be ideal for therapists to accumulate continuing education requirements, emphasizing sessions that offer personalized Mentastics sessions in conjunction with the table work hours for those individuals experiencing chronic pain. Mentastics is an AME and subcategory of exercise (Dasso, 2019) and has a philosophy of performing the movements in a flexible way (Guérin et al., 2019). This may allow easier integration of movement exploration, development of self-efficacy faster, be a valuable tool in the management of chronic pain management and be a valuable practical skill for Trager Practitioners.

Second, it is recommended that current certified Trager practitioners develop their virtual telehealth abilities for one-on-one Mentastics sessions. A 2016 study examined the internal and external motivational factors that encourage continuity in a movement program (Barnes et al., 2016). Factors included the role of social media on exercise adherence (Barnes et al., 2016). Social media provided accountability (having someone

check on your goal), positive reinforcement, and lifestyle integration (Barnes et al., 2016). I recommend therapists create private Facebook Mentastics groups where the therapist follows and recommends changes, adaptations, or accessory use to clients through a virtual group. This would support the client and have the clients support each other towards a lifestyle integration. Mentastics testimonials could also be provided in a small non-judgmental social format.

It is suggested that pre-made Mentastics videos only be recommended to chronic pain participants who have extensive experience using self-management and movement protocols. Ideally, participants should also have exposure to both the Trager Table work protocol and an entire Mentastics session. Finally, it is recommended that Mentastics type movements become an optional studied component for massage therapy education in Canada without requiring full Trager certification. The gentleness of the movements appears to be more easily adapted to a chronic pain clientele and accepted by them.

Future Research

I have three recommendations for possible future research to advance the knowledge in this area. I recommend that research be conducted with specific case studies for different and more specific types of chronic pain (e.g., fibromyalgia, arthritis in specific areas of the body, or scoliosis/postural deviations). It will be educative to compare if specific types of musculoskeletal chronic pain sufferers have differing perceptions concerning the Mentastics method. This is important since research has found that individuals with musculoskeletal pain have realistic views of the benefits of specific treatment protocols and expectations; however, they will not engage in activities unless

they offer approximately a 50% improvement in their condition (Anderson et al., 2016). Perceptions from varying categories of these pain sufferers would illuminate practitioners on the likelihood to engage and maintain the Mentastics protocol on a more generalized scale.

Instead of utilizing virtual interviews for participants to describe their perceptions, future research should utilize in-person interviews. This is especially important in recruiting individuals of specific age, income, and geographic groups in North America who do not have access to technology (i.e., high-speed internet, computers, smart phones, email, Facebook). Additionally, recruiting via Facebook support groups recruits a more technologically savvy segment of the population (Partridge et al., 2018; Prescott et al., 2020; White et al., 2021). A 2015 study found that the two major worries that participants stated regarding the incorporation of virtual healthcare are the absence or inaccessibility of technological tools and the lack of appropriate resources for participants who have low levels of reading comprehension or digital proficiency (DeMonte et al., 2015). A logical next step will be to conduct a study with both quantitative and qualitative data on participants' perceptions and opinions, with live in-person interviews and Mentastics protocol exposures.

I suggest that a mixed-method study format be used for future research, looking at the efficacy of Mentastics, using objective/quantitative measures in addition to qualitative information such as opinions/perceptions. Additional, pre-, and post-intervention with standardized measurements, allowing one to see if Mentastics can manifest physical or mental benefits, which are measurable. Future Mentastics research should also consider

the limitations to study design that has been previously mentioned in relation to other CAM studies.

Conclusion

To date, the Mentastics principles for supporting chronic pain management across a range of conditions have not been theorized or tested. Interdisciplinary research on the topic of Mentastics is lacking. This study was conducted to ascertain the perceptions of the Mentastics method among those experiencing chronic pain. It was clear that the study participants have tried several traditional 'western' medical type treatments such as surgery, physical therapy, and pharmaceutical prescriptions (Figure 1) and more alternative or complementary type methods (Figure 1). It has been discussed that study participants require a perception of self-efficacy or a sense of mastery of a method in order to have positive perceptions towards a health behavior (Guérin et al., 2019; McAlister et al., 2008; Schwarzer et al., 2008).

This study has demonstrated a high level of acceptance of the Mentastics protocol among its chronic pain study participants and willingness to pursue it as a movement protocol. Fear-avoidance behavior is usually present in the chronic pain population (Meulders, 2019). Yet this behavior did not appear to be present in this study's results. Exposure-based protocols seek to share the objective of assisting in restoring physical movement engagement (Vlaeyen et al., 2020). This objective is in line with the Mentastics Protocol objectives (Blackburn, 2003) and appears to develop in some chronic pain subjects; further research is needed. An exploration of Mentastics to improve pain-

related dysfunction for those likely to have fear-avoidance behaviors, is recommended for study.

Positive perceptions towards a behavior and self-efficacy levels are intertwined in the recommendations for health behavior change (McAlister et al., 2008; Schwarzer et al., 2008). When looking at various movement self-care protocols and their likelihood of 'adherence to them' in the chronic pain population, it is essential to explore AME methods that are perceived positively by individuals. The discovery of Mentastics 'perceptions' was therefore important as a first study of its kind for the chronic pain population.

Most participants were open to using the method for themselves and even recommending it to others. However, using a pre-made video protocol for its use was not the recommended protocol. Most participants were open to virtual Mentastics participation, but in a one-on-one one live format or live group format attended by others similar area-specific chronic pain experiences. Although these formats would technically be of lesser cost than manual massage therapy sessions, they would still incur a higher cost than creating more global, pre-recorded Mentastics videos for various chronic pain conditions. Additionally, due to the parameters of this study, it is recommended that an increased outreach via education and publicity be developed, among the general population, concerning the Mentastics method. Specifically, to the less exposed/ experienced Complimentary Alternative Medicine segment, of the chronic pain population, in order to collect data of a more varied type and facilitate recruitment.

This research explored a chronic pain intervention that has had no previous research. Despite the limitations of this study and the challenges of COVID-19, this study makes a meaningful contribution to the field of study in Complementary Alternative Medicine. While it was difficult to structure the research parameters for this study, the current study offers the first exploration of people's perceptions of the lesser-known Mentastics self-care protocol encompassed with the TPI MD method

REFERENCES

Akhtar, M.W., Karimi, H., & Gillani, S.A. (2017). Effectiveness of core stabilization exercises and routine exercise therapy in management of pain in chronic nonspecific low back pain: A randomized controlled clinical trial. *Pakistan Journal of Medical Sciences, 33*(4), 1002-1006. https://doi.org/10.12669/pjms.334.12664

Alam, K. (2020). A systematic qualitative case study: questions, data collection, NVivo analysis and saturation. *Qualitative Research in Organizations and Management: An International Journal, 16*(1), 1-31. doi:10.1108/QROM-09-2019-1825

Amarya, S., Singh, K., & Sabharwal, M. (2014). Health consequences of obesity in the elderly. *Journal of Clinical Gerontology and Geriatrics*, *5*(3), 63-67. https://doi.org/10.1016/j.jcgg.2014.01.004.

Anderson, M., Choinière, M., El-Gabalawy, H., Laliberté, J., Swidrovich, J., & Wilhelm, L. (2019). Canadian Pain Task Force Report: June 2019. *Health Canada*.

Anderson, R. J., Hurley, R. W., Staud, R., & Robinson, M. E. (2016). Cognitive-motivational influences on health behavior change in adults with chronic pain. *Pain Medicine, 17*(6), 1079-1093. https://doi.org/10.1111/pme.12929

Angus Reid Institute. (2019, September 10). Canadians in chronic pain: Cost, access to treatment pose significant barriers for those suffering the most. Retrieved May 29, 2020, from http://angusreid.org/chronic-pain-in-canada/

Arnetz, J. E., Almin, I., Bergström, K., Franzen, Y., & Nilsson, H. (2004). Active patient involvement in the establishment of physical therapy goals: effects on treatment outcome

and quality of care. *Advances in Physiotherapy*, *6*(2), 50-69. https://doi.org/10.1080/14038190310017147

Artus, M., Croft, P., & Lewis, M. (2007). The use of CAM and conventional treatments among primary care consulters with chronic musculoskeletal pain. *BMC Family Practice*, *8*(1), 26. doi: 10.1186/1471-2296-8-26. PMID: 17480212; PMCID: PMC1878478.

Badalato, G.M., Kaag, M., Lee, R., Vora, A., & Burnett, A. (2020). Role of telemedicine in urology: Contemporary practice patterns and future directions. *Urology Practice*, *7*(2), 122-126. doi: https://doi.org/10.1097/upj.0000000000000094

Baker, K. S., Gibson, S., Georgiou-Karistianis, N., Roth, R. M., & Giummarra, M. J. (2016). Everyday executive functioning in chronic pain: specific deficits in working memory and emotion control, predicted by mood, medications, and pain interference. *The Clinical Journal of Pain*, *32*(8), 673-680. doi: 10.1097/AJP.0000000000000313. PMID: 26626294.

Barnes, J., Rhee, Y.C., & Tallent, R.J. (2016). Motivation toward physical activity: Effect of social media community on exercise adherence. Media Watch, 7(3), 299-314. doi: https://doi.org/10.17613/fykz-ay34

Barzun, J., & Graft, H. J. (1992). *The modern researcher*. Harcourt Brace Janovic.

Bauer, B. A., Cutshall, S. M., Wentworth, L. J., Engen, D., Messner, P. K., Wood, C. M., Brekke, K. M., Kelly, R. F., & Sundt III, T. M. (2010). Effect of massage therapy on pain, anxiety, and tension after cardiac surgery: a randomized study. *Complementary Therapies in Clinical Practice*, *16*(2), 70-75. doi: 10.1016/j.ctcp.2009.06.012

Becker, W.C., Dorflinger, L., Edmond, S.N., Islam, L., Heapy, A.A., & Fraenkel, L. (2017). Barriers and facilitators to use of non-pharmacological treatments in chronic pain. *BMC Family Practice*, *18*(1). https://doi.org/10.1186/s12875-017-0608-2

Benjamin, P. J. (2010). Tappan's handbook of healing massage techniques. Pearson.

Berardelli, A., Rothwell, J. C., Thompson, P. D., & Hallett, M. (2001). Pathophysiology of bradykinesia in Parkinson's disease. *Brain*, *124*(11), 2131-2146. doi: https://doi.org/10.1093/brain/124.11.2131

Berg, B. L., & Lune, H. (2017). *Qualitative research methods for the social sciences*: Pearson.

Birnie, K. A., Killackey, T., Stinson, J., Noel, M., Lorenzetti, D. L., Marianayagam, J., Jordan, I., Jordan, E., Neville, A., Pavlova, M., Campbell, F., & Lalloo, C. (2021). Best practices for virtual care to support youth with chronic pain and their families: A rapid systematic review to inform health care and policy during COVID-19 and beyond. *Pain Reports*, *6*(2), e935. doi: 10.1097/PR9.0000000000000935. PMID: 34104841; PMCID: PMC8177877.

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: a tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research*, *26*(13), 1802-1811. doi: 10.1177/1049732316654870. Epub 2016 Jul 10. PMID: 27340178.

Blackburn, J. (2003). Trager® psychophysical integration–an overview. *Journal of Bodywork and Movement Therapies*, *7*(4), 233-239. doi: https://doi.org/10.1016/S1360-8592(03)00042-1.

Bogdan, R. C., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theories and methods.* Pearson.

Bone and Joint Canada. (2014). *Low back pain*. http://boneandjointcanada.com/low-back-pain/

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development.* Sage.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. doi:10.1191/1478088706qp063oa

Bunton, R., Baldwin, S., Flynn, D., & Whitelaw, S. (2000). The 'stages of change' model in health promotion: Science and ideology. Critical Public Health, 10(1), 55-70. doi: https://doi.org/10.1080/713658223

Burton, R. R. (2008). Parkinson's disease without tremor masquerading as mechanical back pain: A case report. *The Journal of the Canadian Chiropractic Association*, *52*(3), 185-192. doi: 0008-3194/2008/185–192

Büssing, A., Ostermann, T., Lüdtke, R., & Michalsen, A. (2012). Effects of yoga interventions on pain and pain-associated disability: a meta-analysis. *The Journal of Pain*, *13*(1), 1-9. Doi: 10.1016/j.jpain.2011.10.001

Caetano, L.C., Pacheco, B.D., Samora, G.A., Teixeira-Salmela, L.F., & Scianni, A.A. (2020). Self-efficacy to engage in physical exercise and walking ability best predicted exercise adherence after stroke. *Stroke Research and Treatment, 2020*, 1-6. https://doi.org/10.1155/2020/2957623

Canadian Institute for Health Information. (2019). Opioid prescribing in Canada: how are practices changing? Canadian Institute for Health Information.

Chen, Y.L., & Francis, A.J. (2010). Relaxation and imagery for chronic, non-malignant pain: Effects on pain symptoms, quality of life, and mental health. *Pain Management Nursing*, *11*(3), 159-168. https://doi.org/10.1016/j.pmn.2009.05.005

Chen, Y. W., Camp, P. G., Coxson, H. O., Road, J. D., Guenette, J. A., Hunt, M. A., & Reid, W. D. (2017). Comorbidities that cause pain and contributors to pain in individuals with chronic obstructive pulmonary disease. *Archives of Physical Medicine and Rehabilitation*, *98*(8), 1535-1543.

Clauw, D.J., Essex, M.N., Pitman, V., & Jones, K.D. (2019). Reframing chronic pain as a disease, not a symptom: rationale and implications for pain management. *Postgraduate Medicine*, *131*(3), 185-198. https://doi.org/10.1080/00325481.2019.1574403

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research. Techniques and procedures for developing grounded theory* (3rd ed.). Sage. doi: https://doi.org/10.4135/9781452230153

Crabtree, B. F., Crabtree, B. F., & Miller, W. L. (1999). *Doing qualitative research*: Sage.

Cramer, H., Lauche, R., Haller, H., & Dobos, G. (2013). A systematic review and meta-analysis of yoga for low back pain. *The Clinical Journal of Pain*, *29*(5), 450-460. doi: 10.1097/AJP.0b013e31825e1492

Crane, J. D., Ogborn, D. I., Cupido, C., Melov, S., Hubbard, A., Bourgeois, J. M., & Tarnopolsky, M. A. (2012). Massage therapy attenuates inflammatory signaling after exercise-induced muscle damage. *Science Translational Medicine*, *4*(119), 119ra13. doi: 10.1126/scitranslmed.3002882. PMID: 22301554.

Cresswell, C., Galantino, M. L., & Myezwa, H. (2020). The prevalence of fear avoidance and pain catastrophizing amongst patients with chronic neck pain. *South African Journal of Physiotherapy*, *76*(1), 1-9. doi: 10.4102/sajp.v76i1.1326

Creswell, J. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Sage.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage.

Currie, M., Philip, L. J., & Roberts, A. (2015). Attitudes towards the use and acceptance of eHealth technologies: a case study of older adults living with chronic pain and implications for rural healthcare. *BMC health services research, 15*(1), 1-12. doi: 10.1186/s12913-015-0825-0

Currie, S. R., & Wang, J. (2004). Chronic back pain and major depression in the general Canadian population. *Pain, 107*(1-2), 54-60. doi: 10.1016/j.pain.2003.09.015.

Dahlhamer, J., Lucas, J., Zelaya, C., Nahin, R., Mackey, S., DeBar, L., Kerns, R., Korff, M., Porter, L., & Helmick, C. (2018). Prevalence of chronic pain and high-impact chronic pain among adults—United States, 2016. *Morbidity and Mortality Weekly Report, 67*(36), 1001-1006. doi: 10.15585/mmwr.mm6736a2

Daly, J. (Ed.) (1996). *Ethical intersections: Health research, methods and researcher responsibility*. Allen and Unwin.

Dasso, N. A. (2019, January). How is exercise different from physical activity? A concept analysis. *Nursing Forum*, 54(1), pp. 45-52. doi: 10.1111/nuf.12296

DeMonte, C. M., DeMonte, W. D., & Thorn, B. E. (2015). Future implications of eHealth interventions for chronic pain management in underserved populations. *Pain Management, 5*(3), 207-214. doi: 10.2217/pmt.15.9

deVous, D. A. (1995). *Surveys in social research.* Allen and Unwin.

Dodds, S., & Hess, A. C. (2020). Adapting research methodology during COVID-19: Lessons for transformative service research. *Journal of Service Management*, 32(2), 203-217. doi: 10.1108/josm-05-2020-0153

Domenichiello, A. F., & Ramsden, C. E. (2019). The silent epidemic of chronic pain in older adults. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *93*, 284-290. doi: 10.1016/j.pnpbp.2019.04.006

Dragon, D. A. (2015). Creating cultures of teaching and learning: Conveying dance and somatic education pedagogy. *Journal of Dance Education*, *15*(1), 25-32. doi: https://doi.org/10.1080/15290824.2014.995015

Dreyer, N. E., Cutshall, S. M., Huebner, M., Foss, D. M., Lovely, J. K., Bauer, B. A., & Cima, R. R. (2015). Effect of massage therapy on pain, anxiety, relaxation, and tension after colorectal surgery: A randomized study. *Complementary Therapies in Clinical Practice*, *21*(3), 154-159. doi: 10.1016/j.ctcp.2015.06.004

Duval, C., Lafontaine, D., Hébert, J., Leroux, A., Panisset, M., & Boucher, J. P. (2002). The effect of Trager therapy on the level of evoked stretch responses in patients with Parkinson's disease and rigidity. *Journal of Manipulative and Physiological Therapeutics*, *25*(7), 455-464. doi: 10.1067/mmt.2002.126469

Dyson-Hudson, T. A., Shiflett, S. C., Kirshblum, S. C., Bowen, J. E., & Druin, E. L. (2001). Acupuncture and Trager psychophysical integration in the treatment of wheelchair user's shoulder pain in individuals with spinal cord injury. *Archives of Physical Medicine and Rehabilitation*, *82*(8), 1038-1046. doi: 10.1053/apmr.2001.24888

Ehde, D. M., Dillworth, T. M., & Turner, J. A. (2014). Cognitive-behavioral therapy for individuals with chronic pain: efficacy, innovations, and directions for research. *American Psychologist*, *69*(2), 153-166. doi: 10.1037/a0035747.

Elder, W. G., Munk, N., Love, M. M., Bruckner, G. G., Stewart, K. E., & Pearce, K. (2017). Real-world massage therapy produces meaningful effectiveness signal for primary care

patients with chronic low back pain: Results of a repeated measures cohort study. *Pain Medicine*, *18*(7), 1394-1405. doi: 10.1093/pm/pnw347

Emami, F., Yoosefinejad, A. K., & Razeghi, M. (2018). Correlations between core muscle geometry, pain intensity, functional disability, and postural balance in patients with nonspecific mechanical low back pain. *Medical Engineering & Physics*, *60*, 39-46. doi: https://doi.org/10.1016/j.medengphy.2018.07.006

Ferrell, B. R., Novy, D., Sullivan, M. D., Banja, J., Dubois, M. Y., Gitlin, M. C., Hamaty, D., Lebovits, A., Lipman, A. G., Lippe, P. M., & Livovich, J. (2001). Ethical dilemmas in pain management. *The Journal of Pain*, *2*(3), 171-180. doi: 10.2147/JPR.S162926

Field, T. (2016). Massage therapy research review. *Complementary Therapies in Clinical Practice*, *24*, 224-229. doi: 10.1016/j.ctcp.2016.04.005

Field, T. (2018). Pain and massage therapy: A narrative review. *Current Research in Complementary & Alternative Medicine, 2018*, 1-10. doi: 10.29011/2577-2201/100025

Field, T., Delage, J., & Hernandez-Reif, M. (2003). Movement and massage therapy reduce fibromyalgia pain. *Journal of Bodywork and Movement Therapies*, *7*(1), 49-52. doi: 10.1016/S1360-8592(02)00078-5.

Field, T., Diego, M., Cullen, C., Hernandez-Reif, M., Sunshine, W., & Douglas, S. (2002). Fibromyalgia pain and substance P decrease, and sleep improve after the massage therapy. *Journal of Clinical Rheumatology*, *8*(2), 72-76. doi: 10.1097/00124743-200204000-00002

Field, T., Grizzle, N., Scafidi, F., & Schanberg, S. (1996). Massage and relaxation therapies' effects on depressed adolescent mothers. *Adolescence*, *31*(124), 903-912. PMID: 8970662

Flutur, G., Movileanu, B., Károly, L., Danci, I., Cosovanu, D., & Stan, O. P. (2019). Smart chair system for posture correction. In *22nd Euromicro Conference on Digital System Design.* (pp. 436-441). doi: https://ieeexplore.ieee.org/abstract/document/8875249

Frith, H., & Gleeson, K. (2004). Clothing and embodiment: men managing body image and appearance. *Psychology of Men and Masculinity*, *5*, 40-48. 10.1037/1524-9220.5.1.40

Gearing, R. E. (2004). Bracketing in research: A typology. *Qualitative Health Research*, *14*(10), 1429-1452. doi: https://doi.org/10.1177/1049732304270394

Gatchel, R. J., Neblett, R., Kishino, N., & Ray, C. T. (2016). Fear-avoidance beliefs and chronic pain. *Journal of Orthopaedic & Sports Physical Therapy*, *46*(2), 38-43. doi: 10.2519/jospt.2016.0601.

Ghaffari, B. D., & Kluger, B. (2014). Mechanisms for alternative treatments in Parkinson's disease: Acupuncture, Tai Chi, and other treatments. *Current Neurology and Neuroscience Reports*, *14*(6), 451. doi: 10.1007/s11910-014-0451-y

Gilmour, H. (2015). Chronic pain, activity restriction, and flourishing mental health. *Health Reports*, 26(1), 15-22. PMID: 25606984

Glanz, K., Rimer, B. K., & Viswanath, K. (2008). The health belief model. *Health behaviour and health education: theory, research, and practice.* John Wiley & Sons, Inc.

Globe, D., Knox, L., Mitchell, M., Shtir, C., & Azen, S. (2004). The Trager approach in the treatment of chronic headache: A pilot study. *Alternative Therapies Health Medicine*, *10*(5), 40-46. PMID: 15478785

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, *21*(2), 135-146. doi: https://doi.org/10.1057/ejis.2011.54

Government of Canada. (2016). *Seniors and ageing statistics*. https://www.statcan.gc.ca/eng/subjects-start/seniors_and_aging

Greenberg, J., Lin, A., Zale, E. L., Kulich, R. J., James, P., Millstein, R. A., Shapiro, H., Edwards, R., & Vranceanu, A. M. (2019). Development and early feasibility testing of a mind-body physical activity program for patients with heterogeneous chronic pain; the GetActive study. *Journal of Pain Research*, *12*, 3279-3297. doi: 10.2147/JPR.S222448

Gruzd, A., Jacobson, J., Mai, P., & Dubois, E. (2018). The state of social media in Canada 2017. doi: https://doi.org/10.5683/SP/AL8Z6R

Guérin, E., Strachan, S., & Fortier, M. (2019). Exercise and well-being: Relationships with perceptions of exercise identity-behaviour consistency, affective reactions to exercise and passion. *International Journal of Sport and Exercise Psychology*, *17*(5), 445-458. doi: https://doi.org/10.1080/1612197x.2017.1421681

Guerriere, D. N., Choinière, M., Dion, D., Peng, P., Stafford-Coyte, E., Zagorski, B., Banner, R., Barton, P. M., Boulanger, A., Clark, A. J., Gordon, A. C. L., Guertin, M. C., Intrater, H. M., Lefort, S. M., Lynch, M. E., Moulin, D. E., Ong- Lam, M., Racine, M., Rashin, S., Shir, Y., … Ware, M. (2010). The Canadian stop-pain project - part 2: What is the cost of pain for patients on waitlists of multidisciplinary pain treatment facilities? *Canadian Journal of Anaesthesia*, *57*(6), 549-558. doi: 10.1007/s12630-010-9306-4

Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. In *Proceedings of the first ACM conference on Learning@ scale conference* (pp. 41-50).

Hadjistavropoulos, T., Herr, K., Turk, D. C., Fine, P. G., Dworkin, R. H., Helme, R., Jackson, K., Parmelee, P. A., Rudy, T. E., Beattie, B. L., & Chibnall, J. T. (2007). An interdisciplinary expert consensus statement on assessment of pain in older persons. *The Clinical Journal of Pain*, *23*(P), 1-43. doi: 10.1097/AJP.0b013e31802be869.

Hadjistavropoulos, T., Marchildon, G. P., Fine, P. G., Herr, K., Palley, H. A., Kaasalainen, S., & Béland, F. (2009). Transforming long-term care pain management in North America: The policy–clinical interface. *Pain Medicine*, *10*(3), 506-520. doi: 10.1111/j.1526-4637.2009.00566.x

Hagens, V., Dobrow, M. J., & Chafe, R. (2009). Interviewee transcript review: Assessing the impact on qualitative research. *BMC: Medical Research Methodology*, *9*(1), 9-47. doi: https://doi.org/10.1186/1471-2288-9-47

HajGhanbari, B., Holsti, L., Road, J. D., & Reid, W. D. (2012). Pain in people with chronic obstructive pulmonary disease (COPD). *Respiratory Medicine*, *106*(7), 998-1005. doi: https://doi.org/10.1016/j.rmed.2012.03.004

Hall, A. M., Maher, C. G., Lam, P., Ferreira, M., & Latimer, J. (2011). Tai Chi exercise for the treatment of pain and disability in people with persistent low back pain: A randomized controlled trial. *Arthritis Care & Research*, *63*(11), 1576-1583. doi: https://doi.org/10.1186/1471-2474-10-55

Häuser, W., Schug, S., & Furlan, A. D. (2017). The opioid epidemic and national guidelines for opioid therapy for chronic noncancer pain: A perspective from different continents. *Pain Reports*, *2*(3), 1-35. doi: 10.1097/PR9.0000000000000599

Hayes, N. (1997). *Doing qualitative analysis in psychology*. Psychology Press/Erlbaum (UK) Taylor & Francis

Hogan, M. E., Taddio, A., Katz, J., Shah, V., & Krahn, M. (2016). Incremental health care costs for chronic pain in Ontario, Canada: A population-based matched cohort study of adolescents and adults using administrative data. *Pain*, *157*(8), 1626-1633. doi: 10.1097/j.pain.0000000000000561.

Hou, W. H., Chiang, P. T., Hsu, T. Y., Chiu, S. Y., & Yen, Y. C. (2010). Treatment effects of massage therapy in depressed people: A meta-analysis. *The Journal of Clinical Psychiatry*, *71*(7), 894-901. doi: 10.4088/JCP.09r05009blu

Hsu, W., Guo, S., & Chang, C. (2019). Back massage intervention for improving health and sleep quality among intensive care unit patients. *Nursing in Critical Care*, *24*(5), 313-319. doi: https://doi.org/10.1111/nicc.12428

Huberty, J. L., Green, J., Puzia, M. E., Larkey, L., Laird, B., Vranceanu, A., Vlisides-Henry, R., & Irwin, M. R. (2021). Testing a mindfulness meditation mobile app for the treatment of sleep-related symptoms in adults with sleep disturbance: A randomized controlled trial. *PLOS ONE*, *16*(1), e0244717. doi: https://doi.org/10.1371/journal.pone.0244717

Hussain, N., & Said, A. S. (2019). Mindfulness-based meditation versus progressive relaxation meditation: Impact on chronic pain in older female patients with diabetic neuropathy. *Journal of Evidence-Based Integrative Medicine*, *24*, 2515690X1987659. doi: https://doi.org/10.1177/2515690x19876599

Ignasiak, Z., Sławinska, T., Skrzek, A., Rożek, K., Kozieł, S., Posłuszny, P., & Malina, R. M. (2017). Functional capacities of Polish adults of 60–87 years and risk of losing functional independence. *Annals of Human Biology*, *44*(6), 502-509. doi: 10.1080/03014460.2017.1328071.

Imlach, F., McKinlay, E., Middleton, L., Kennedy, J., Pledger, M., Russell, L., Churchward, M., Cumming, J., & McBride-Henry, K. (2020). Telehealth consultations in general practice during a pandemic lockdown: survey and interviews on patient experiences and preferences. *BMC Family Practice*, *21*(1), 1-14. doi: https://doi.org/10.1186/s12875-020-01336-1

Johannes, C. B., Le, T. K., Zhou, X., Johnston, J. A., & Dworkin, R. H. (2010). The prevalence of chronic pain in United States adults: Results of an Internet-based survey. *The Journal of Pain*, *11*(11), 1230-1239. doi: 10.1016/j.jpain.2010.07.002

Katz, N. (2002). The impact of pain management on quality of life. *Journal of Pain and Symptom Management*, *24*(1), 38-47. doi: 10.1016/s0885-3924(02)00411-6.

Kivunja, C. & Kuyini, A. B. (2017). Understanding and applying research paradigms in educational contexts. *International Journal of Higher Education*, 6(5), 26-41.

Kempson, D. A. (2001). Effects of intentional touch on complicated grief of bereaved mothers. *OMEGA-Journal of Death and Dying*, *42*(2), 341-353. doi: https://doi.org/10.2190/T1U8-JWAU-3RXU-LY1L

Kerns, R. D., & Rosenberg, R. (2000). Predicting responses to self-management treatments for chronic pain: application of the pain stages of change model. *Pain*, *84*(1), 49-55. doi: 10.1016/S0304-3959(99)00184-0

Kligler, B., Bair, M. J., Banerjea, R., DeBar, L., Ezeji-Okoye, S., Lisi, A., Murphy, J. L., Sandbrink, F., & Cherkin, D. C. (2018). Clinical policy recommendations from the VHA state-of-the-Art conference on non-pharmacological approaches to chronic musculoskeletal pain. *Journal of General Internal Medicine, 33*(S1), 16-23. doi: https://doi.org/10.1007/s11606-018-4323-z

Kong, L. J., Zhan, H. S., Cheng, Y. W., Yuan, W. A., Chen, B., & Fang, M. (2013). Massage therapy for neck and shoulder pain: a systematic review and meta-analysis. *Evidence-Based Complementary and Alternative Medicine*, *2013*, 1-10. doi: 10.1155/2013/613279

Krigger, K. W. (2006). Cerebral palsy: An overview. *American Family Physician*, *73*(1), 91-100. PMID: 32053326

Kumar, S., Rampp, T., Kessler, C., Jeitler, M., Dobos, G. J., Lüdtke, R., Meier, L., & Michalsen, A. (2017). Effectiveness of ayurvedic massage (Sahacharadi tail) in patients with chronic low back pain: A randomized controlled trial. *The Journal of Alternative and Complementary Medicine*, *23*(2), 109-115. doi: 10.1089/acm.2015.0272.

Larsson, C., Hansson, E. E., Sundquist, K., & Jakobsson, U. (2016). Impact of pain characteristics and fear-avoidance beliefs on physical activity levels among older adults with chronic pain: a population-based, longitudinal study. *BMC Geriatrics*, *16*(1), 1-8. doi: 10.1186/s12877-016-0224-3

Ledel Solem, I. K., Varsi, C., Eide, H., Kristjansdottir, O. B., Mirkovic, J., Børøsund, E., Haaland-Øverby, M., Heldal, K., Schreurs, K. M., Waxenberg, L. B., Weiss, K. E., Morrison, E. J., & Solberg Nes, L. (2019). Patients' needs and requirements for eHealth pain management interventions: Qualitative study. *Journal of Medical Internet Research*, *21*(4), e13205. doi: https://doi.org/10.2196/13205

Laursen, B. S., Bajaj, P., Olesen, A. S., Delmar, C., & Arendt-Nielsen, L. (2005). Health-related quality of life and quantitative pain measurement in females with chronic non-malignant pain. *European Journal of Pain, 9*(3), 267-275. doi: 10.1016/j.ejpain.2004.07.003

Lindgren, L., Jacobsson, M., & Lämås, K. (2014). Touch massage, a rewarding experience. *Journal of Holistic Nursing, 32,* 261-268. doi: https://doi.org/10.1177/0898010114531855

Liskin, J. (1997). *Moving medicine: The life and work of Milton Trager, MD*. Station Hill Publishers.

Lohne, V., Heer, H. C. D., Andersen, M., Miaskowski, C., Kongerud, J., & Rustøen, T. (2010). A qualitative study of the pain of patients with chronic obstructive pulmonary disease. *Heart & Lung, 39*(3), 226-234. doi: 10.1016/j.hrtlng.2009.08.002.

Loisel, P., Lemaire, J., Poitras, S., Durand, M. J., Champagne, F., Stock, S., Diallo, B., & Tremblay, C. (2002). Cost-benefit and cost-effectiveness analysis of a disability prevention model for back pain management: A six-year follow-up study. *Occupational and Environmental Medicine*, *59*(12), 807-815. doi: 10.1136/oem.59.12.807

Loughran, J. J. (2004). Learning through self-study: The influence of purpose, participants, and context. In *International handbook of self-study of teaching and teacher education practices* (pp. 151-192). Springer, Dordrecht.

Lynch, M. E. (2011). The need for a Canadian pain strategy. Pain Research Management, 16(2), 77-80. doi: 10.1155/2011/654651

Lynch, M. E., Campbell, F., Clark, A. J., Dunbar, M. J., Goldstein, D., Peng, P., Stinson, J., & Tupper, H. (2008). A systematic review of the effect of waiting for treatment for chronic pain. *Pain*, *136*(1-2), 97-116. doi: 10.1016/j.pain.2007.06.018

Lynch, M. E., Schopflocher, D., Taenzer, P., & Sinclair, C. (2009). Research funding for pain in Canada. *Pain Research and Management, 14*, 113-115. doi: 10.1155/2009/746828

Majchrzycki, M., Kocur, P., & Kotwicki, T. (2014). Deep tissue massage and nonsteroidal anti-inflammatory drugs for low back pain: A prospective randomized trial. *The Scientific World Journal*, *2014*, 1-7. doi: 10.1155/2014/287597

Majeed, M. H., Ali, A. A., & Sudak, D. M. (2019). Psychotherapeutic interventions for chronic pain: Evidence, rationale, and advantages. *The International Journal of Psychiatry in Medicine*, *54*(2), 140-149. doi: https://doi.org/10.1177/0091217418791447

Malaguti, C., Rondelli, R. R., de Souza, L. M., Domingues, M., & Dal Corso, S. (2009). Reliability of chest wall mobility and its correlation with pulmonary function in patients with chronic obstructive pulmonary disease. *Respiratory Care*, *54*(12), 1703-1711. PMID: 19961637

Marletta, G., Canfora, A., Roscani, F., Cernicchiaro, L., Cutrera, M., Russo, M., Artioli, G., & Sarli, L. (2015). The complementary medicine (CAM) for the treatment of chronic pain: Scientific evidence regarding the effects of healing touch massage. *Acta Bio Medica Atenei Parmensis*, *86*(2), 127-133. PMID: 26629667

Maxcy, S. J. (2003). Pragmatic threads in mixed methods research in the social sciences: The search for multiple modes of inquiry and the end of the philosophy of formalism. In A. Tashakkori, C. Teddlie, (Eds.) *Handbook of mixed methods in social and behavioral research (*pp. 51-89). Sage.

McAlister, A. L., Perry, C. L., & Parcel, G. S. (2008). How individuals, environments, and health behaviors interact. How individuals, environments, and health behaviors interact: Social

cognitive theory. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp. 169–188). Jossey-Bass.

Meana, M., Cho, R., & DesMeules, M. (2004). Chronic pain: the extra burden on Canadian women. *BMC Women's Health*, *4*(1), 1-11. doi: https://doi.org/10.1186/1472-6874-4-S1-S17

Meehan, E., & Carter, B. (2021). Moving with Pain: What principles from somatic practices can offer to people living with chronic pain. *Frontiers in Psychology*, *11*, 620381. doi: 10.3389/fpsyg.2020.620381

Meulders, A. (2019). From fear of movement-related pain and avoidance to chronic pain disability: A state-of-the-art review. *Current Opinion in Behavioral Sciences*, *26*, 130-136. doi: https://doi.org/10.1016/j.cobeha.2018.12.007

Meulders, A. (2020). Fear in the context of pain: Lessons learned from 100 years of fear conditioning research. *Behaviour Research and Therapy*, *131*, 103635. doi: https://doi.org/10.1016/j.brat.2020.103635

Milan, A. M. (2011). *Age and sex structure: Canada, provinces, and territories, 2010.* Statistics Canada. https://www150.statcan.gc.ca/n1/en/pub/91-209-x/2011001/article/11511-eng.pdf?st=dPuU_Mi9

Money, S., & Garber, B. (2018). Management of cancer pain. *Current Emergency and Hospital Medicine Reports*, *6*(4), 141-146. doi: 10.1007/s40138-018-0170-9

Montano, D.E. and Kasprzyk, D. (2015) Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (5th ed.) (pp. 169–188). Jossey-Bass.

Moo, L. R., Gately, M. E., Jafri, Z., & Shirk, S. D. (2020). Home-based video telemedicine for dementia management. *Clinical Gerontologist*, *43*(2), 193-203. doi: https://doi.org/10.1080/07317115.2019.1655510

Morrow, M. M., Kaufman, K. R., & An, K. N. (2010). Shoulder model validation and joint contact forces during wheelchair activities. *Journal of Biomechanics*, *43*(13), 2487-2492. doi: 10.1016/j.jbiomech.2010.05.026

Morse, J.M. (1991). Strategies for sampling. In Morse, J. (Ed.), *Qualitative nursing research: A contemporary dialogue* (pp. 117-131). Sage.

Moulin, D. E., Clark, A. J., Speechley, M., & Morley-Forster, P. K. (2002). Chronic pain in Canada-prevalence, treatment, impact, and the role of opioid analgesia. *Pain Research and Management, 7*, 179-184. doi: 10.1155/2002/323085.

Moyer, C. A., Rounds, J., & Hannum, J. W. (2004). A meta-analysis of massage therapy research. *Psychological Bulletin*, *130*(1), 3-18. doi: 10.1037/0033-2909.130.1.3.

Muanjai, P., Jones, D. A., Mickevicius, M., Satkunskiene, D., Snieckus, A., Skurvydas, A., & Kamandulis, S. (2017). The acute benefits and risks of passive stretching to the point of pain. *European Journal of Applied Physiology*, *117*(6), 1217-1226. doi: https://doi.org/10.1007/s00421-017-3608-y

Neuman, M. L. (1997). *Social research methods: Qualitative and quantitative approaches*. Allyn & Bacon.

Neyaz, O., Sumila, L., Nanda, S., & Wadhwa, S. (2019). Effectiveness of hatha yoga versus conventional therapeutic exercises for chronic Nonspecific low-back pain. *The Journal of Alternative and Complementary Medicine*, *25*(9), 938-945. doi: https://doi.org/10.1089/acm.2019.0140

Opheim, A., Jahnsen, R., Olsson, E., & Stanghelle, J. K. (2009). Walking function, pain, and fatigue in adults with cerebral palsy: A 7-year follow-up study. *Developmental Medicine & Child Neurology*, *51*(5), 381-388. doi: 10.1111/j.1469-8749.2008.03250.x.

Oyibo, K., Adaji, I., & Vassileva, J. (2018). Social cognitive determinants of exercise behavior in the context of behavior modeling: A mixed method approach. *Digital Health*, *4*, 2055207618811555. doi: 10.1177/2055207618811555

Pace, A. (2019). Economic impact of chronic headaches. In M. Green, R. Cowan, F. Freitag (Eds.), *Chronic headache* (pp. 309-311). Springer.

Parr, C. A., & Witt, P. L. (1989). Effectiveness of Trager psychophysical integration in promoting trunk mobility in a child with Cerebral Palsy: A case report. *Physical & Occupational Therapy in Pediatrics*, *8*(4), 75-94. doi: https://doi.org/10.1080/J006v08n04_05

Partridge, S. R., Gallagher, P., Freeman, B., & Gallagher, R. (2018). Facebook groups for the management of chronic diseases. *Journal of Medical Internet Research*, *20*(1), e21. doi: https://doi.org/10.2196/jmir.7558

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Sage.

Peng, P. W. (2012). Tai chi and chronic pain. *Regional Anesthesia & Pain Medicine, 37*(4), 372-382. doi: 10.1097/AAP.0b013e31824f6629

Posadzki, P., & Ernst, E. (2011). Yoga for low back pain: A systematic review of randomized clinical trials. *Clinical Rheumatology*, *30*(9), 1257-1262. doi: 10.1007/s10067-011-1764-8

Posadzki, P., Ernst, E., Terry, R., & Lee, M. S. (2011). Is yoga effective for pain? A systematic review of randomized clinical trials. *Complementary Therapies in Medicine*, *19*(5), 281-287. doi:10.1016/j.ctim.2011.07.004

Prescott, J., Rathbone, A. L., & Brown, G. (2020). Online peer to peer support: Qualitative analysis of UK and US open mental health Facebook groups. *Digital Health*, *6*, 205520762097920. doi: https://doi.org/10.1177/2055207620979209

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, *51*(3), 390-395. doi: 10.1037//0022-006x.51.3.390

Ramírez-Maestre, C., & Esteve, R. (2014). The role of sex/gender in the experience of pain: resilience, fear, and acceptance as central variables in the adjustment of men and women with chronic pain. *The Journal of Pain*, *15*(6), 608-618. doi: 10.1016/j.jpain.2014.02.006

Ramstad, K., Jahnsen, R., Skjeldal, O. H., & Diseth, T. H. (2011). Characteristics of recurrent musculoskeletal pain in children with cerebral palsy aged 8 to 18 years. *Developmental Medicine & Child Neurology*, *53*(11), 1013-1018. doi: 10.1111/j.1469-8749.2011.04070.x

Reid, M. C., Eccleston, C., & Pillemer, K. (2015). Management of chronic pain in older adults. *British Medical Journal*, *350*, 1-10. doi: 10.1136/bmj.h532

Rivera-Torres, S., Fahey, T. D., & Rivera, M. A. (2019). Adherence to exercise programs in older adults: Informative report. *Gerontology and Geriatric Medicine*, *5*, 233372141882360. doi: https://doi.org/10.1177/2333721418823604

Rorty, R. (1980, August). Pragmatism, relativism, and irrationalism. In *Proceedings and addresses of the American Philosophical Association* (Vol. 53, No. 6, pp. 717-738). American Philosophical Association.

Rossman, G.B., & Rallis, S.F. (1998). *An introduction to qualitative research: Learning in the field*. Sage.

Ruiz-Montero, P. J., & Castillo-Rodríguez, A. (2016). Body composition, physical fitness, and exercise activities of elderly. *Journal of Physical Education and Sport*, *16*(3), 860-865. doi: 10.7752/jpes.2016.03136

Rupert, D. J., Poehlman, J. A., Hayes, J. J., Ray, S. E., & Moultrie, R. R. (2017). Virtual versus in-person focus groups: Comparison of costs, recruitment, and participant logistics. *Journal of Medical Internet Research*, *19*(3), e80. doi: https://doi.org/10.2196/jmir.6980

Rusch, H. L., Rosario, M., Levison, L. M., Olivera, A., Livingston, W. S., Wu, T., & Gill, J. M. (2019). The effect of mindfulness meditation on sleep quality: A systematic review and meta-analysis of randomized controlled trials. *Annals of the New York Academy of Sciences*, *1445*(1), 5-16. doi: https://doi.org/10.1111/nyas.13996

Sable, A., Sivabalan, T., & Shetti, A. N. (2017). Effectiveness of back massage on sleep pattern among patients with congestive cardiac failure. *Iranian Journal of Nursing and Midwifery Research*, *24*(5), 359-362. doi: 10.4103/ijnmr.IJNMR_142_16

Saeed, S. A., Cunningham, K., & Bloch, R. M. (2019). Depression and anxiety disorders: benefits of exercise, yoga, and meditation. *American Family Physician, 99*(10), 620-627. PMID: 31083878

Sarantakos, S. (1998). *Social research*. Macmillan

Saunders, G. (2019). Tools of the trade: Massage tables, table accessories, linens, lubricants, essential oils, and the treatment room. *Massage Therapy E-Book: Principles and Practice, 37*.

Schopflocher, D., Taenzer, P., & Jovey, R. (2011). The prevalence of chronic pain in Canada. *Pain Research and Management, 16*, 445-450. doi: 10.1155/2011/876306

Schuck, S., & Russell, T. (2005). Self-study, critical friendship, and the complexities of teacher education. *Studying Teacher Education, 1*(2), 107-121. doi: https://doi.org/10.1080/17425960500288291

Schütze, R., Rees, C., Preece, M., & Schütze, M. (2010). Low mindfulness predicts pain catastrophizing in a fear-avoidance model of chronic pain. *Pain, 148*(1), 120-127. doi: 10.1016/j.pain.2009.10.030.

Schwartz, L., Engel, J. M., & Jensen, M. P. (1999). Pain in persons with cerebral palsy. *Archives of Physical Medicine and Rehabilitation, 80*(10), 1243-1246. doi: 10.1016/s0003-9993(99)90023-0

Schwarzer, R., Luszczynska, A., Ziegelmann, J. P., Scholz, U., & Lippke, S. (2008). Social-cognitive predictors of physical exercise adherence: Three longitudinal studies in rehabilitation. *Health Psychology*, 27(1S), S54-63. doi: 10.1037/0278-6133.27.1(Suppl.).S54

Scudds, R. J., & McD Robertson, J. (1998). Empirical evidence of the association between the presence of musculoskeletal pain and physical disability in community-dwelling senior citizens. *Pain, 75*(2-3), 229-235. doi: 10.1016/s0304-3959(97)00224-8

Shafir, E., & LeBoeuf, R. A. (2002). Rationality. *Annual Review of Psychology, 53*(1), 491–517. doi: https://doi.org/10.1146/annurev.psych.53.100901.135213

Shanthanna, H., Strand, N. H., Provenzano, D. A., Lobo, C. A., Eldabe, S., Bhatia, A., Wegener, J., Curtis, K., Cohen, S. P., & Narouze, S. (2020). Caring for patients with pain during the COVID -19 pandemic: Consensus recommendations from an international expert panel. *Anaesthesia*, *75*(7), 935-944. doi: https://doi.org/10.1111/anae.15076

Sherman, K. J., Cherkin, D. C., Connelly, M. T., Erro, J., Savetsky, J. B., Davis, R. B., & Eisenberg, D. M. (2004). Complementary and alternative medical therapies for chronic low back pain: What treatments are patients willing to try? *BMC Complementary and Alternative Medicine*, *19*(4), 9. doi: https://doi.org/10.1186/1472-6882-4-9

Shim, M., Johnson, R. B., Gasson, S., Goodill, S., Jermyn, R., & Bradt, J. (2017). A model of dance/movement therapy for resilience-building in people living with chronic pain. *European Journal of Integrative Medicine*, *9*, 27-40. doi: https://doi.org/10.1016/j.eujim.2017.01.011

Slade, S. C., & Keating, J. L. (2007). Unloaded movement facilitation exercise compared to no exercise or alternative therapy on outcomes for people with nonspecific chronic low back pain: A systematic review. *Journal of Manipulative and Physiological Therapeutics*, *30*(4), 301-311. doi: 10.1016/j.jmpt.2007.03.010.

Smith, E. M., Giesbrecht, E. M., Mortenson, W. B., & Miller, W. C. (2016). Prevalence of wheelchair and scooter use among community-dwelling Canadians. *Physical Therapy*, *96*(8), 1135-1142. doi: 10.2522/ptj.20150574

Smith, W. B. (2004). Research methodology: Implications for CAM pain research. *The Clinical Journal of Pain*, *20*(1), 3-7. doi: 10.1097/00002508-200401000-00002.

Solem, I. K. L., Varsi, C., Eide, H., Kristjansdottir, O. B., Mirkovic, J., Børøsund, E., Haaland-Øverby, M., Heldal, K., MG Schreurs, K., B Waxenberg, L., Weiss, K. E., Morrison, E.

J., & Nes, L. S. (2019). Patients' needs and requirements for eHealth pain management interventions: Qualitative study. *Journal of medical Internet research, 21*(4), e13205. doi: 10.2196/13205.

Stinson, J., White, M., Isaac, L., Campbell, F., Brown, S., Ruskin, D., Gordon, A., Galonski, M., Pink, L., Buckley, N., Lallo, C., Karin, A., & Henry, J. L. (2013). Understanding the information and service needs of young adults with chronic pain: perspectives of young adults and their providers. *The Clinical Journal of Pain, 29*(7), 600-612. doi: 10.1097/AJP.0b013e31826dce65

Stokes, M., Becker, W. J., Lipton, R. B., Sullivan, S. D., Wilcox, T. K., Wells, L., Manack, A., Proskorovsky, I., Gladstone, J., Buse, D. C., Goadsby, P. J., Blumenfels, A. M., & Varon, S. F. (2011). Cost of health care among patients with chronic and episodic migraine in Canada and the USA: Results from the International Burden of Migraine Study (IBMS). *Headache: The Journal of Head and Face Pain, 51*(7), 1058-1077. doi: https://doi.org/10.1186/s10194-019-1068-y

Tarride, J. E., Moulin, D. E., Lynch, M., Clark, A. J., Stitt, L., Gordon, A., Morley-Forster, P. K., Nathan, H., Smyth, C., Toth, C., & Ware, M. A. (2015). Impact on health-related quality of life and costs of managing chronic neuropathic pain in academic pain centers: Results from a one-year prospective observational Canadian study. *Pain Research and Management, 20*, 327-333. doi: 10.1155/2015/214873

Tawiah, A. K., Desmeules, F., Wieler, M., Finucane, L., Lewis, J., Woodhouse, L. J., & Stokes, E. (2021). Advanced practice in physiotherapy: A global survey. *Physiotherapy*, 20(6), 327-333. doi: https://doi.org/10.1016/j.physio.2021.01.001

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care, 19*(6), 349-357. doi: https://doi.org/10.1093/intqhc/mzm042

Tsai, P. F., Chang, J. Y., Beck, C., Kuo, Y. F., & Keefe, F. J. (2013). A pilot cluster-randomized trial of a 20-week Tai Chi program in elders with cognitive impairment and osteoarthritic knee: Effects on pain and other health outcomes. *Journal of Pain and Symptom Management, 45*(4), 660-669. doi: 10.1016/j.jpainsymman.2012.04.009

Tsao, J. C. (2007). Effectiveness of massage therapy for chronic, non-malignant pain: A review. *Evidence-based Complementary and Alternative Medicine,4*, 165-179. doi: 10.1093/ecam/nel109

Uyeshiro Simon, A., & Collins, C. E. (2017). Lifestyle Redesign® for chronic pain management: A retrospective clinical efficacy study. *The American Journal of Occupational Therapy*, *71*(4), 7104190040p1-7104190040p7. doi: 10.5014/ajot.2017.025502

Vlaeyen, J. W., & Crombez, G. (2020). Behavioral conceptualization and treatment of chronic pain. *Annual Review of Clinical Psychology*, 16, 187-212. doi: 10.1146/annurev-clinpsy-050718-095744.

van Hooff, M. L., Vriezekolk, J. E., Kroeze, R. J., O'Dowd, J. K., van Limbeek, J., & Spruit, M. (2021). Targeting self-efficacy more important than dysfunctional behavioral cognitions in patients with longstanding chronic low back pain; a longitudinal study. *BMC Musculoskeletal Disorders*, *22*(1), 1-9. doi: https://doi.org/10.1186/s12891-021-04637-3

Varrassi, G., Moretti, B., Pace, M. C., Evangelista, P., & Iolascon, G. (2021). Common clinical practice for low back pain treatment: A modified Delphi study. *Pain and Therapy*, *10*(1), 589-604. doi: https://doi.org/10.1007/s40122-021-00249-w

Webster, P. (2020). Virtual health care in the era of COVID-19. *The Lancet*, *395*(10231), 1180-1181. doi: https://doi.org/10.1016/s0140-6736(20)30818-7

White, E., Read, J., & Julo, S. (2021). The role of Facebook groups in the management and raising of awareness of antidepressant withdrawal: Is social media filling the void left by health services? *Therapeutic Advances in Psychopharmacology*, *11*, 204512532098117. doi: https://doi.org/10.1177/2045125320981174

Williamson, G. M., & Shaffer, D. R. (2002). The activity restriction model of depressed affect. In G. M. Williamson, D. R. Shaffer, P. A. Parmelee (Eds.) *Physical illness and depression in older adults* (pp. 173-200). Springer.

Winston, K. R., French, B., & Bunn, J. (2018). Chronic debilitating headache in adults caused by craniocerebral disproportion: treatment by cranial vault expansion. *Cureus*, *10*(2), e2187. doi: 10.7759/cureus.2187

Witt, P. L., & MacKinnon, J. (1986). Trager psychophysical integration: A method to improve chest mobility of patients with chronic lung disease. *Physical Therapy*, *66*(2), 214-217. doi: 10.1093/ptj/66.2.214.

Woolf, C. J. (2010). What is this thing called pain? *The Journal of Clinical Investigation*, *120*(11), 3742-3744. doi: 10.1172/JCI45178

Zachrison, K. S., Boggs, K. M., Hayden, E. M., Espinola, J. A., & Camargo, C. A. (2020). Understanding barriers to telemedicine implementation in rural emergency departments.

Annals of Emergency Medicine, *75*(3), 392-399. doi: https://doi.org/10.1016/j.annemergmed.2019.06.026

Zhou, W. S., Lin, J. H., Chen, S. C., & Chien, K. Y. (2019). Effects of dynamic stretching with different loads on hip joint range of motion in the elderly. *Journal of Sports Science & Medicine*, *18*(1), 52. PMID: 30787651

Appendix A: Ethics Approval letter

MEMORIAL UNIVERSITY

Interdisciplinary Committee on Ethics in Human Research (ICEHR)

St. John's, NL Canada A1C 5S7
Tel: 709 864-2561 icehr@mun.ca
www.mun.ca/research/ethics/humans/icehr

ICEHR Number:	**20211403-HK**
Approval Period:	April 7, 2021 – April 30, 2022
Funding Source:	
Responsible Faculty:	Dr. Angela Loucks-Atkinson School of Human Kinetics and Recreation
Title of Project:	*Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in chronic pain management*

April 7, 2021

Mrs. Christina Serpa
School of Human Kinetics and Recreation
Memorial University of Newfoundland

Dear Mrs. Serpa:

Thank you for your correspondence addressing the issues raised by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) concerning the above-named research project. ICEHR has re-examined the proposal with the clarification and revisions submitted, and is satisfied that the concerns raised by the Committee have been adequately addressed. In accordance with the *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2)*, the project has been granted *full ethics clearance* to April 30, 2022. ICEHR approval applies to the ethical acceptability of the research, as per Article 6.3 of the *TCPS2*. Researchers are responsible for adherence to any other relevant University policies and/or funded or non-funded agreements that may be associated with the project.

The *TCPS2* **requires** that you submit an Annual Update to ICEHR before April 30, 2022. If you plan to continue the project, you need to request renewal of your ethics clearance and include a brief summary on the progress of your research. When the project no longer involves contact with human participants, is completed and/or terminated, you are required to provide an annual update with a brief final summary and your file will be closed. If you need to make changes during the project which may raise ethical concerns, you must submit an Amendment Request with a description of these changes for the Committee's consideration prior to implementation. If funding is obtained subsequent to approval, you must submit a Funding and/or Partner Change Request to ICEHR before this clearance can be linked to your award.

All post-approval event forms noted above can be submitted from your Researcher Portal account by clicking the *Applications: Post-Review* link on your Portal homepage. We wish you success with your research.

Yours sincerely,

Kelly Blidook, Ph.D.
Vice-Chair, Interdisciplinary Committee on Ethics in Human Research

KB/bc

cc: Supervisor – Dr. Angela Loucks-Atkinson, School of Human Kinetics and Recreation

Appendix B: Social Media Announcement

Volunteers Needed for Research Study

The Mentastics Trager Psychophysical Integration Method in chronic pain management

DO YOU EXPERIENCE CHRONIC PAIN? ARE YOU LOOKING FOR A DIFFERENT HOLISTIC PAIN MANAGEMENT TECHNIQUES?

The purpose of the study is to explore the perceptions of the permanent residents of Canada concerning the *Mentastics Trager Psychophysical Integration Method* for chronic pain management as an affordable self-care technique.

We are looking for people who have been diagnosed with non-malignant (non-cancerous) chronic pain, are over 40 years old, and live in Canada with residency status. We are asking you to watch and try a 15-minute Mentastics movement video and complete an e-interview of approximately 60 minutes in length. The virtual interviewer will ask you questions about your demographics, chronic pain, opinions, and perceptions of the Mentastics Trager Psychophysical Integration Method. You will need access to the internet to view the video and access to a front camera communication device, such as a smartphone, tablet, or computer with a camera. We are specifically seeking to recruit individuals having experienced chronic pain for more than 5 years and that have participated in one or multiple pain management protocols

The study will consist of watching and trying comfortable self-care movements from a 15-minute pre-recorded Mentastics video and a 60-minute virtual interview with the Principal Investigator using the stream-yard online software. Mentastics consists of participating in a combination of mental meditative type exercises with gentle stretching. This method may aid in inducing a state of mental and physical relaxation in participants.

If you are interested in participating in this study, or if you have any questions about the research being conducted, please contact Christina Serpa by e-mail at cserpa@mun.ca. Participation in this study is NOT a requirement of the Facebook groups involved in posting this study on my behalf and will not be reported to anyone.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as your rights as a

participant, you may contact the Chairperson of the ICEHR at icehr.chair@mun.ca or by telephone at 709-864-2861.

Appendix C: Study Information Email

Study Information Email

Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in chronic pain management

Good Day

My name is Christina Serpa. I am a Master of Physical Education student under Dr. Angela Loucks-Atkinson and Dr. David Hancock at Memorial University, in the School of Human Kinetics & Recreation. I am contacting you to invite you to participate in my master's thesis research project entitled "Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in chronic pain management."

Background:

In Canada, more than 20% of adults suffer from chronic pain and have been suffering for 10 or more years. The cost of pain management appears to have skyrocketed with chronic pain sufferers paying out almost 17000$ Canadian a year from their own pockets. On top of this high cost, it is estimated that 75% of those suffering from chronic pain need more pain management options but cannot afford to try anything new. There is a little know method called "Mentastics," a division of the Massage technique "Trager MD Psychophysical Integration method. It was developed by Dr. Milton Trager for those unable to afford or have access to a certified massage Trager MD therapist. Some of the health benefits are that this method may aid in inducing a state of mental and physical relaxation in participants.

We are looking for individuals who are Canadian residents over the age of 40, diagnosed with any type of chronic non-malignant (non-cancerous) pain in the past 5 years. We are specifically seeking to recruit individuals having experienced chronic pain for more than 5 years and that have participated in one or multiple pain management protocols Ideally, you will have a good internet connection with an electronic device that will allow you to view a webpage with a video and participate in a virtual online interview. Participation in this study is NOT a requirement of the Facebook groups involved in posting this study on my behalf and will not be reported to anyone.

What you will do in this study:

You will be asked to watch a 15-minutes video introducing the Mentastics Trager Md technique. Mentastics consists of participating in a combination of mental meditative type exercises with gentle stretching. You will then be asked to participate in a 60-minute online interview (e-interview). I will ask you about your opinions and perceptions of the Mentastics Trager Md technique video. There will be some background questions asked, such as age and sex, along with questions about your medical history concerning chronic

pain, in addition to the opinion and perception questions about the Mentastics video. You will have the right to refuse to answer any question in addition to withdrawing from the study at any time. An audio recording will be taken of the e-interview.

Length of time:
Total time commitment is approximately 1.5 hours (video= 15 min, interview = 1hours.

Informed Consent:
Prior to beginning the interview, an informed consent form will be sent to you. I will ask that you read the form and email me back the form with your e-signature. During the virtual interview, you will have the opportunity to ask questions and confirm that you would still like to take part in the study. You will be free to withdraw from the study at any time during the data collection process.

Participation:
If you wish to schedule an interview, please respond to this email with your current availability for a virtual interview of approximately 60 minutes, between 10 am to 2pm eastern standard time, from Monday to Saturday.

Thank you,
Christina Serpa, Master of Physical Education (Student)
Memorial University
cserpa@mun.ca
(514)571-7037

Appendix D: Informed Consent Form

Title: Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in chronic pain management

Researcher: Christina Serpa, B.A., N, D, Master of Physical Education Student at School of Human Kinetics and Recreation, Memorial University of Newfoundland, cserpa@mun.ca

My name is Christina Serpa. I am a Master of Physical Education student under Dr. Angela Loucks-Atkinson and Dr. David Hancock at Memorial University, in the School of Human Kinetics & Recreation. You are invited to take part in a research project entitled "Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in chronic pain management."

This document is part of the process of informed consent. It is meant to give you the basic concept of what the research is about and what your participation will involve. It also describes and explains your right to withdraw from the study. In order for you to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Please, take the time to read this document carefully and to understand the information presented to you. Please contact me, Christina Serpa, if you have any questions concerning the study or would like more information before you consent to the virtual interview.

It is entirely up to you to decide whether you wish to take part in this research study. If you choose not to take part in this research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

Introduction:

In Canada, more than 20% of adults suffer from chronic pain and have been suffering for 10 or more years. The cost of pain management appears to have skyrocketed, with chronic pain sufferers paying out almost 17000$ Canadian a year from their own pockets. On top of this high cost, it is estimated that 75% of those suffering from chronic pain need more pain management options but cannot afford to try anything new. There is a little know method called "Mentastics," a division of the Massage technique "Trager MD Psychophysical Integration method. It was developed by Dr. Milton Trager for those unable to afford or have access to a certified massage Trager MD therapist. Some of the health benefits are this method may aid in inducing a state of mental and physical relaxation in participants. We are specifically seeking to recruit individuals having experienced chronic pain for more than 5 years and that have participated in one or multiple pain management protocols

What you will do in this study:

You will have an opportunity to have your opinions and perceptions heard about a video on the Mentastics Trager Md technique. The information you provide could lead to recommendations for increasing the use of Mentastics in chronic pain management, offering people access to a less known but affordable and effective technique for improving muscular and mental relaxation. You will be asked to watch the 15-minute low-movement physically active Mentastics video and participate in a 60-minute individual virtual interview (checkboxes are provided at the end of this form). Mentastics consists of participating in a combination of mental meditative type exercises with gentle stretching.

All interviews will be audio-recorded and transcribed (typed out) verbatim after receiving your consent. All transcribed interview documents will be used as study data. You will have opportunities to review your transcribed data when it has been categorized into "theme" (or general ideas/categories) and final research findings.

Length of time:
Total time commitment is approximately 2 hours (video = 15 min, interview = 1 hour; review of themes and total email correspondence = 45 minutes)

Withdrawal from the study:
If you decide to withdraw or not participate in certain aspects of the study, you will be free to do so at any point in time (e.g., time of recruitment, after watching the video, during the interview, after the interview) without penalty of any sort. If you request a withdrawal (verbally or in writing), the researcher will accept the request immediately. You do not need to provide any reason and are free to omit any question(s) that you do not wish to answer. During the interview, if you wish to stop the interview, stop recording and end your participation at any moment you are free to do so, and the PI will delete any and all recordings or collected data immediately. If you wish to withdraw, please contact Christina Serpa by phone or email. You will have 3 weeks after your interview has been transcribed and emailed to you for feedback, in order for you to decide if you would like us to remove your data from the study completely.

Possible benefits:
You will have an opportunity to have your opinions and perceptions heard about the Mentastics Trager Md technique. The information you provide could lead to recommendations for increasing the use of Mentastics in chronic pain management.

Possible risks:
Participants will be subjected to little physical risk as the guided movement recommendations in the Mentastics video are depicted to stay within personal limitations and comfort. There may be minimal emotional discomfort resulting from discussing issues surrounding participant chronic pain histories, past experiences, perceptions, understandings, and experiences in relation to your medical history. Although emotional

and physical risks are considered minimal in this study they will vary for each individual in additional to the possible benefits. If a participant would like the support of a mental health professional, they will be encouraged to contact Provincial Mental Health Crisis Line, The Mental Health and Addictions Division, Department of Health and Community Services NL (1-888-737-4668). In case of an emergency please contact 911.

Confidentiality:
The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use, or disclosure. The following steps will be taken to protect your confidentiality.) Names or other identifying features of the study participants will be removed from transcripts. B) The audio recording of the e-interview will be identified by a code only, (C) the data codes will be secured and kept separate from the data, D) Informed consent e-documents will be stored on a password-protected computer, separate from the transcripts. E) The data will be presented as common themes and behavioral theories, concerning participants, which will emerge from the transcripts. Quotes from the participants may be used to explain the themes, but all recognizable names, nicknames, online personas, or personal identifiers will be removed from the quotes.

Anonymity:
Anonymity refers to protecting participants' identifying characteristics. While your interview will be audio-recorded and transcribed, all identifying information (e.g., digital, and legal names, online community organizations) will be removed, and codes/pseudonyms will be used to protect your identity. Every reasonable effort will be made to ensure your confidentiality; you will not be identified in publications.

A fellow research student or "critical friend" will have access to the data, after it has been "anonymized," with codes/ pseudonyms. A critical friend is a fellow graduate student who will challenge the theories and principal investigators initial opinions concerning the data. Although data will be anonymized by the PI, research supervisors, the critical friend and any third-party transcribers will be asked to sign a confidentiality or non-disclosure agreement, to further protect participants and the data. If you would like a copy of this non-disclosure agreement one will be sent to you at your request.

Although basic demographic information such as age, sex, chronic pain type, and pain level will be asked, it is to aid in the research process. All participants will have the ability to opt-out of sharing any of this demographic information or any questions asked in general that they choose. The demographic information will be used to increase the transferability of the findings to the chronic pain community in Canada. Contact information will be obtained to stay in contact with the participants to share the study themes and research findings.

Recording of Data:
Your permission for audio-recording is required for you to participate in the study (checkbox is provided at the end of this form). Two audio-recorders will be used, the Stream Yard Software and an iPhone voice memo app to record interviews. The Stream yard privacy policy may be found here : https://streamyard.com/resources/docs/privacy/. The stream yard software has the ability to allow you "the interviewee" to turn off their camera anytime during the interview process and only record your audio. The audio-recording feature is the only feature required for you to participate- the video recording feature is optional.

Storage of Data:
Christina Serpa and her master's thesis supervisors will have direct access to the data during the study and after the completion of the study. They will assume the responsibility for data storage. All data (e.g., transcripts) will be deemed confidential material and will be filed (i.e., digital audio recordings, researcher notes) will be password protected and stored on an external hard drive that will be locked in a locked filing cabinet with Christina Serpa's Naturopathic and Massage Clinic's office.

The first method to be attempted for data transcription will be to use a transcription software named transcribe wreally. This software has a highly secure data storage process and extensive privacy policy. Their security features may be found at https://transcribe.wreally.com/article/how-secure-is-my-data-when-i-use-transcribe-17 and their privacy policy may be found at: https://transcribe.wreally.com/legal/privacy and will not leave the PI's secured computer. If this fails, transcribing services may be required. If transcription services providers will be required to sign a non-disclosure agreement. A copy of the non-disclosure agreements can be sent to you at your request.

The digital recordings and transcripts will be stored separately from the master file which is able to identify participant names, pseudonyms, and code numbers. The coded master file will be stored in a separate locked fireproof safe at a secret secure location, that only the PI can access. The master code file will be deleted and destroyed after the completion of the study. Data will be kept for five years, as required by Memorial University's policy on Integrity in Scholarly Research. After five years, all data will be permanently removed from the external hard drive

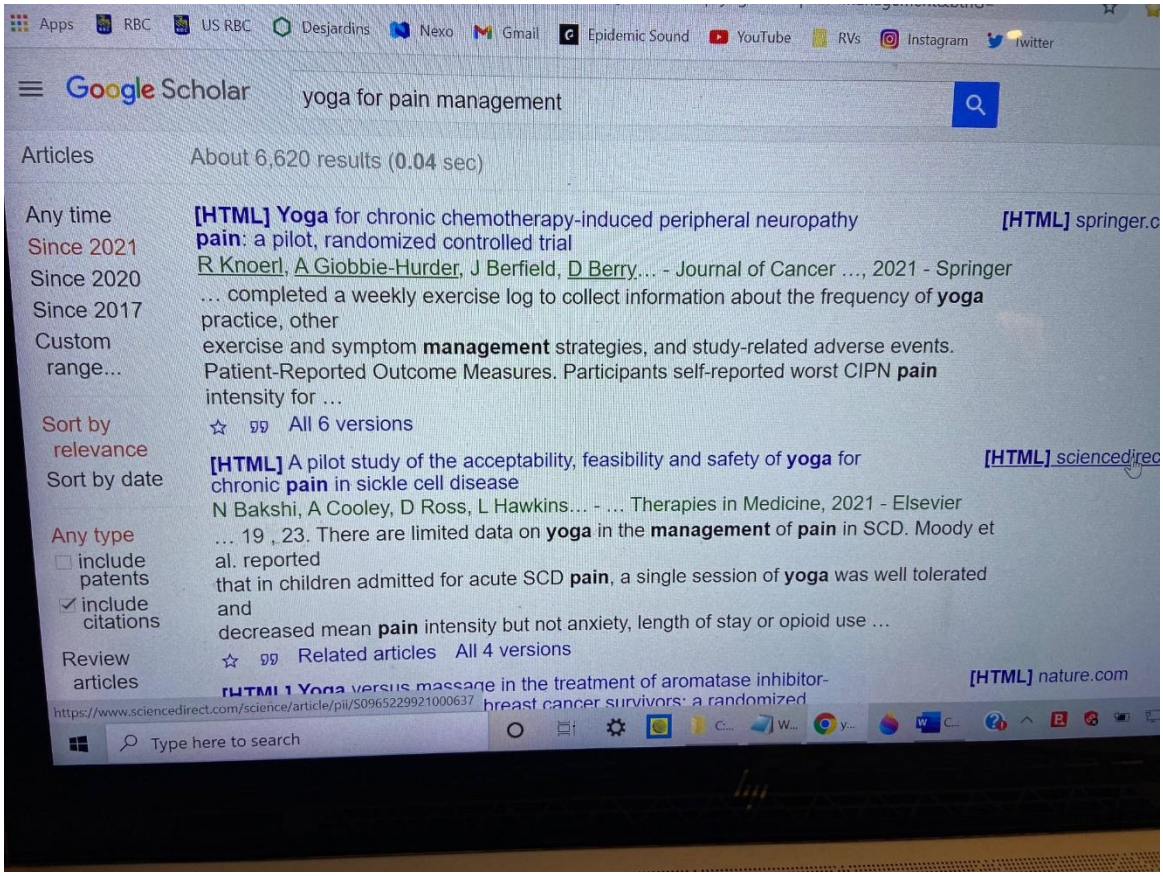
Reporting of Results:
The data will be analyzed and presented as common behavioral theory themes across participants and the study, as they emerge from the transcripts. Quotes from your interview may be used to illustrate the themes (checkbox is provided at the end of this form). However, all names, locations, or personal identifiers will be removed from the quotes. The research findings will be presented in academic conference presentations, published in scholarly journals and industry and mainstream media magazines. In addition, findings will also be published in my thesis and will be publicly available at the Queen Elizabeth II library.

Sharing of Results with Participants:
Within 14 days of the recorded interview a transcript of your interview will be provided, with identifying characteristics already removed from the document. You will have 3 days to review your transcripts and give feedback, via the registered contact email. You will have access to research findings without having to contact the researcher. Once the study has concluded, the findings will be delivered to each participant via the email provided.

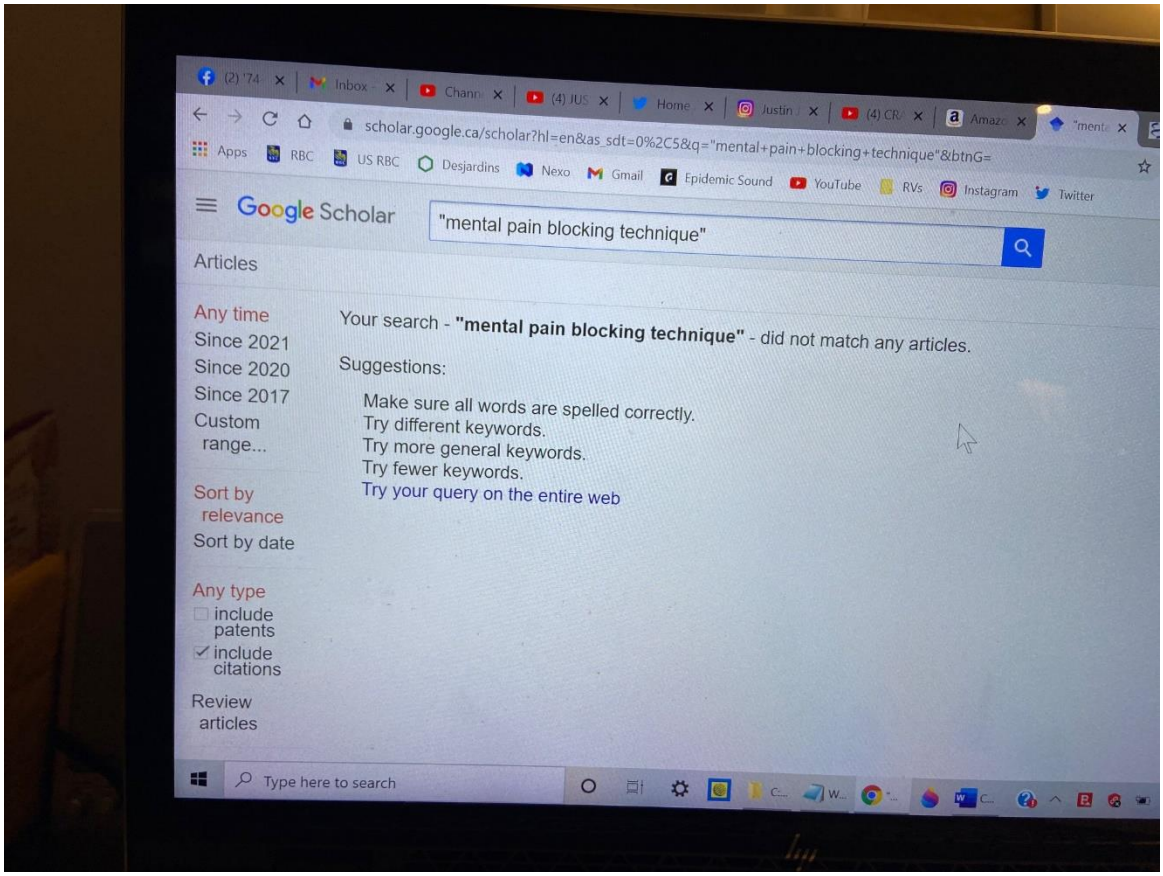
Questions:
You are welcome to ask questions at any time before, during, or after your participation in this research. If you would like more information about this study, please contact any member of the research team.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Appendix E: Yoga screen shot



Appendix F: Mental pain blocking screen shot



Appendix G: Interview Questions

Exploring perceptions of the Mentastics Trager Psychophysical Integration Method in chronic pain management

Script:
Before we begin, I would like to remind you that you can skip any questions you do not wish to answer. Also, the stream yard software has the ability to allow you "the interviewee" to turn off their camera anytime during the interview process and only record your audio. The audio-recording feature is the only feature required for you to participate- the video recording feature is optional.

Background Questions

1. What is your age:
2. What is your sex:
3. What type of non-malignant chronic pain have you been diagnosed with?
4. How long have you suffered with this type of chronic pain?
5. What type of traditional or complementary alternative medicine technique(s) have you tried before?
6. Did you look up and information about the Trager Psychophysical Integration MD Method prior to this interview?

Opinion/Perception Questions

1. What did you think about the video?
    a. What did you like?
    b. What did you dislike?
    c. Have your opinions changed since first watching it?
2. A goal of Mentastics is to use gentle movements. What were your thoughts about using gentle movements as opposed to contracting muscles?
    a. Please explain.
3. A goal of Mentastics is to change the feeling in specific targeted areas of the body. How did your targeted area (or areas) feel after doing the video?
    a. Please explain.
4. Do you believe following Mentastics on a regular basis would decrease pain?
    a. Please explain.
5. Would you consider incorporating Mentastics into your pain management routine?
    a. Please explain.
6. If you could change anything about Mentastics, what would it be?
    a. What about the format (online, one-on-one in person, or in a group)?
7. Would you recommend Mentastics to others' living in pain?
    a. Please explain.

Summary Questions

1. Are there any questions I should have asked, but did not?
2. Do you have any final questions or comments before we end

Informed consent form

Consent:
Your signature on this form means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw participation in the study without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that if you choose to end participation **during** data collection, any data collected from you up to that point will be destroyed.
- You understand that if you choose to withdraw **after** data collection has ended, your data can be removed from the study up to one month after the completion of your review of research findings.

I agree to watch a 15-min video	☐ Yes	☐ No
I agree to participate in a 60 min e-interview	☐ Yes	☐ No
I agree to be audio-recorded or video-recorded	☐ Yes	☐ No
I agree to the use of direct quotations	☐ Yes	☐ No
I agree to the 3-week cut-off date, upon receiving my transcripts, as the time limit where my data can non-longer be withdrawn from the study.	☐ Yes	☐ No

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your signature confirms:

☐ I have read what this study is about and understood the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions ad my questions have been answered.

☐ I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation.

☐ A copy of this Informed Consent Form has been given to me for my records.

_____ _____

Signature of participant Date

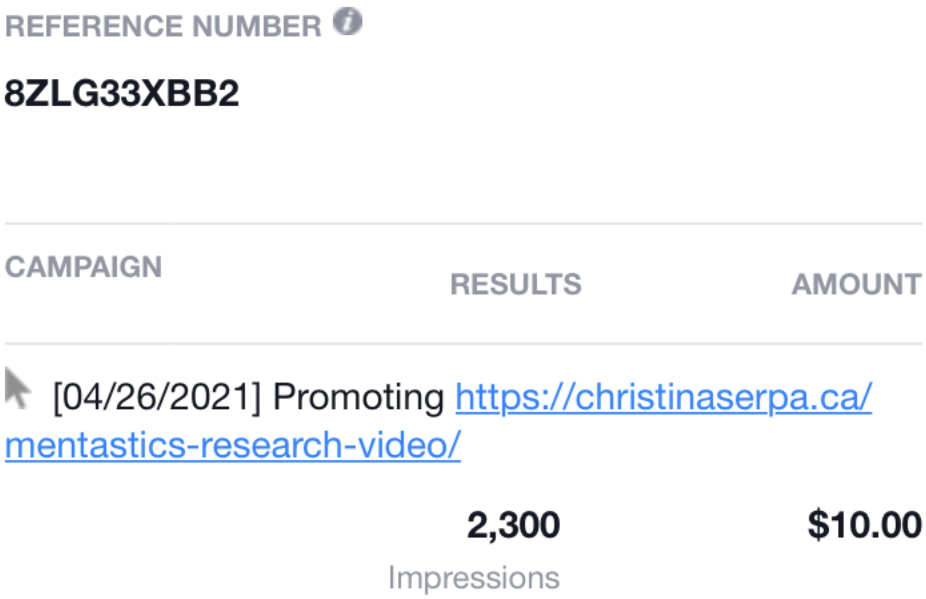
Researcher's Signature:

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ _____

Signature of Principal Investigator Date

Appendix H: Facebook impressions



Appendix I: Facebook advertisement comments