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Victoria Hughes

Sarah Lawrence College, tori.hughes1994@gmail.com

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Using Dance/Movement Therapy and Laban Movement Analysis to Build a Better Model of
Rehabilitation for Chronic Pain

Victoria Hughes

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Abstract

This paper aims to explore the physical and psychological symptoms of chronic pain, the current treatments for chronic pain, and the use of Dance/Movement Therapy with Laban Movement Analysis and Bartenieff Fundamentals to build a better rehabilitation model that integrates the treatment of both the physical and psychological symptoms of chronic pain for long-term treatment. Currently, chronic pain is medically managed by separating the physical and psychological symptoms, creating an oversimplified and fragmented treatment process. Many medical and alternative treatments are reliant on pharmaceuticals and do not integrate the treatment of physical and psychological symptoms, rendering the current chronic pain treatment unsuccessful. Dance/Movement Therapy with Laban Movement Analysis and Bartenieff Fundamentals accomplishes the integration of observation, assessment, and intervention of both physical and psychological symptoms, bridging together the different therapeutic strategies which are fragmented within the traditional medical model to provide a holistic rehabilitation process. This paper introduces a better model of rehabilitation for chronic pain centered on Dance/Movement Therapy with Laban Movement Analysis and Bartenieff Fundamentals.

Keywords: dance/movement therapy, chronic pain, pain management, rehabilitation, Laban Movement Analysis

Many people experience pain and injury in their lifetime, but for some, pain is a constant. Chronic pain affects 100 million people in the United States annually, nearly one third of the United States population (Rasu et al., 2013). Chronic pain is defined by the International Society for Pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage that persists for at least three months, and which manifests with certain autonomic, psychological, and behavioral reactions” (Oesman, Shieff, 2017, p. 110). Essentially, chronic pain affects one’s whole being, not only in the experience of physical pain but also as a presence in one’s mental health and social interactions. Pain comes from the Latin word that means penalty, exposing the tradition of pain being seen as a punishment inflicting itself on all aspects of an individual’s life (Seth, 2016). Chronic pain exists in five different categories, which include commonly known diagnoses such as Arthritis, Fibromyalgia, and Sciatica (Rasu et al., 2013). Chronic pain is diagnosed through the current medical model which is often rigid and one-dimensional, neglecting that chronic pain is a subjective experience (Pasero et al., 2016). One’s relationship to pain is based on one’s psychological make up, support system, coping skills, and the ability to verbalize their pain experience to others. Pain is expressed verbally and nonverbally, and can be felt/interpreted differently across ages, genders, and races making it individualized and difficult to treat (Pasero et al., 2016; Rasu et al., 2013). This not only affects the individual’s relationship to pain and felt sensations but these factors also have an influence on the overall treatment process, including access to care, patient belief/knowledge, communication/interpretation of pain by both patients and doctors, and on the pharmaceutical prescribing habits of physicians (Rasu et al., 2013).

Physical and Psychological Symptomatology

Chronic pain includes physical and psychological symptoms, as well as social implications that affect the overall functioning of an individual. Chronic pain disrupts activities of daily life (ADLs) by triggering painful sensations, making an individual unable to accomplish everyday tasks without pain (Seth, 2016). By disrupting everyday tasks, an individual's focus attends more strongly to the pain, how to avoid it, and how to accomplish tasks and activities that were previously second nature. Individuals with chronic pain eventually avoid activities and movements, which trigger painful sensations, out of the fear of furthering/worsening their pain condition (Seth, 2016; Hapidou, 2012). This can ultimately lead to a complete change in way of living in the present, and changes the trajectory of an individual's life drastically. Avoiding painful movements and/or activities may aid the individual in managing their pain in the short-term but causes physical deconditioning in the long term (Seth, 2016). Physical deconditioning is perpetuated by fear avoidance, a symptom of anxiety, in which the individual operates under the perception that pain is harmful to the body and that painful physical activity is dangerous (Hapidou, 2012). This manifests in physical and psychological behaviors which keeps an individual from engaging in activities or movements, resulting in withdrawal from work, leisure, and other activities in order to minimize potential discomfort (Seth, 2016; Hapidou, 2012). In addition to the fear of pain itself, individuals with chronic pain may experience the fear of movement or re-injury which is called Kinesiophobia (Hapidou, 2012). Kinesiophobia is "an excessive, irrational, and debilitating fear of physical movement and activity resulting from feeling of vulnerability to painful injury or reinjury" (Hapidou, 2012, p. 236). Kinesiophobia highlights the link between the fear of painful sensations and the fear of furthering their condition through physical movement.

Chronic pain is often accompanied by complaints of depression which include, altered appetite and weight, disrupted sleep, decreased energy, diminished concentration, and irritability (Seth, 2016). These depression symptoms have an adverse effect on individuals with chronic pain, altering their pain perception, decreasing their pain thresholds, and decreasing their tolerance for pain, which perpetuates and prolongs their pain sensations (Seth, 2016). Anxiety symptoms and physical pain play into each other, causing, affecting, and furthering the chronic pain experience. Those with chronic pain may experience concerns regarding possible illnesses connected to their chronic pain, concerns about their finances connecting to treatment costs, and worries about their physical functioning in the future (Seth, 2016). These anxieties are triggered by an individual's painful disruption of daily activities, which contributes to the perception of disability. Social isolation is a problem with individuals living with chronic pain, who commonly pull away from contact with others due to feeling misunderstood or not being taken seriously (Shim, 2015). Chronic pain has a “destructive impact” on the socialization of individuals such as increased catastrophizing (Shim, 2015, p. 113), pain-related fear, depression, disability, pain sensations, and reduced physical activity (Hapidou, 2012). Catastrophization, a common anxiety-related experience, is the “evaluation of a negative event as worse than it should actually be” (Suso-Ribera et al. et al., 2016, p. 193). Catastrophizing of pain symptoms affects the perception of an individual's pain intensity and interference, physical disability, depression and anxiety perpetuating the already debilitating physical nature of chronic pain (Suso-Ribera et al., 2016). Excessive worrying about current and future pain leads to further psychological distress, increasing kinesiophobia and fear avoidance behavior, which causes physical deconditioning, exacerbating chronic pain symptoms (Suso-Ribera et al., 2016; Seth, 2016).

Current Medical Treatment

Within the current medical model, treatment of chronic pain is split into a physical and psychological dichotomy rather than treating symptoms simultaneously (Seth, 2016). The current treatment of chronic pain relies heavily on the prescription of pharmaceuticals such as opioids and analgesic medications (Rasu et al., 2013). The use of opioids impairs the individual's coping strategies, causes fatigue, causes an inability to concentrate, and alters their pain perception, increasing the difficulty in effectively managing chronic pain symptoms for both clients and clinicians (Seth, 2016). Opioid side effects such as a heightened sensitivity to pain and loss of pain-relief or tolerance leads to a significant number of patients misusing their opioid regimen by tampering with their dosages in order to escape or feel relief from physical pain and their emotional responses to that pain (Hsu, 2017; McHugh et al., 2016). The need to escape the physical and emotional symptoms of chronic pain with opioid usage is a direct result of pain-related anxiety and avoidance behavior in an effort to find immediate relief from physical pain sensations and psychological distress (McHugh et al., 2016). Opioids may mask the bodily sensations of pain, but the psychological effects are not being addressed, contributing to opioid dependence and addiction. Over two million people in the United States struggle with opioid-related substance abuse disorders which are classified under mental health diagnoses (National, 2017; Paterson et al., 2016).

Although opioids are the most common treatment and are effective for short-term use, there is insufficient evidence to support the effectiveness of long-term opioid use for improving chronic pain (Morrone et al., 2017; Hsu, 2017). Research has found that opioids are less effective than non-steroidal anti-inflammatories, no more effective than acetaminophen, and only slightly more effective than placebos in treating chronic pain symptoms in long-term trials (Hsu, 2017). The Centers for Disease Control and Prevention (CDC) recommends non-pharmaceutical

therapies in the treatment of chronic pain before the use of opioids (Campos-Outcalt, 2016). Opioids are now recommended as a last resort treatment of chronic pain and yet the medical system still prescribes them as the first source of treatment. Ninety-nine percent of individuals seeking treatment for chronic pain have been prescribed medication with less attention to combination therapies such as pharmaceuticals with exercise, stress management, and psychotherapy, which are more effective in long-term pain management (Rasu et al., 2013).

Depression and anxiety, which occur comorbidly with chronic pain, are commonly treated by prescribing chronic pain clients antidepressants alongside their opioid regimen (Rasu et al., 2013). The combination of opioids, psychological disorders, and antidepressant medication alters an individual's perception of their pain, impairing their coping strategies, and encourages misuse of prescription drugs, leading to addiction (McHugh et al., 2016; Seth, 2016). Depression and anxiety, which includes fear avoidance behaviors, are in a reciprocal relationship with chronic pain, demanding a need for integrated physical and psychological treatment (Seth, 2016).

Chronic pain affects one third of the United States' population, yet there are not enough pain-management specialists and adequate treatments to address the many interrelated issues that this population faces. With the complexities of chronic pain and its treatment, many individuals never receive adequate pain management (Rasu et al., 2013). Forty five percent of chronic pain patients visit their Primary Care Physicians in order to diagnose and treat their chronic pain, compared to the 0.12% of chronic pain patients that go to pain specialists for treatment (Rasu et al., 2013). Primary Care Physicians treat 52% of chronic pain patients nationally, while pain specialists only treat two percent (Rasu et al., 2013). The need for pain services by chronic pain clients outnumbers the current availability within the medical system (Rasu et al., 2013). As the need for pain services outnumbers the current availability of appropriate treatment, chronic pain

clients are driven to stay on long-term opioids before ever being referred to a pain specialist (Hsu, 2017). A typical approach to chronic pain treatment is the prescription and long-term usage of opioids, which are more often prescribed by primary care physicians than pain specialists (Rasu et al., 2013; Hsu, 2017). Pain specialists may recommend non-medication treatments before resorting to opioid usage, aligning more closely with the CDC treatment guidelines (Campos-Outcalt, 2016; Rasu et al., 2013; Hsu, 2017). There is a need for more pain specialists and training for primary care physicians on the topic of pain management and the available treatments in order to treat chronic pain effectively, providing each individual with adequate treatment (Rasu et al., 2013).

Surgical procedures may be chosen for chronic pain patients when their pain is not being effectively managed on opioids (Oesman, Shieff, 2017). Surgical procedures are utilized for the relief of chronic pain by “surgically removing the source of the pain or cutting or blocking the pain pathways by pharmacological or surgical means” (Shim, 2015, p. 9). New technology and modern imaging have expanded the knowledge of pain and have transitioned from the traditional severing of nerves towards more low-risk, reversible techniques (Oesman, Shieff, 2017). However, surgical procedures come with risks, such as possible neurological consequences and may not result in full pain relief (Shieff, 2014).

A mainstream non-pharmacological treatment in chronic pain management utilized with and without pharmacological or surgical intervention, is physical therapy (Wenzel, 2011). The Institute for Clinical Systems Improvement (ICSI) guidelines promote the use of non-pharmacological treatments such as physical therapy in combination with medication to address the physical dysfunction associated with chronic pain (Rasu et al., 2013; Wenzel, 2011). Physical therapists work to assess and treat chronic pain patients through manual techniques, modalities,

and home exercises that are intended to fix or control physical/mechanical dysfunctions (Wenzel, 2011). Individuals with chronic pain complain that physical therapy is too aggressive and painful, reinforcing the perception that physical exercise is not helpful in improving symptoms (Wenzel, 2011). This perpetuates physical and psychological symptoms, such as kinesiophobia and fear avoidance, by maintaining the individual's perception that movement cause damage. In physical therapy chronic pain is treated similarly to acute pain, lacking the attention to the deeper complexities of chronic pain (Wenzel, 2011). Physical therapy is ineffective for individuals with chronic pain due to the failure to recognize and treat the long-term physical, psychological, and social aspects of chronic pain, essentially being unable to meet all of the patients' needs (Wenzel, 2011). Treatment within the traditional medical model which focuses on curing mechanical dysfunction is too simplified for the physical and psychological complexities of chronic pain (Seth, 2016; Wenzel, 2011).

Current treatment of chronic pain symptoms is fragmented, only addressing the physical *or* psychological. Within chronic pain these factors are enmeshed together, but within the current medical model, physicians focus on only the physical body, solely treating the mechanical deficiencies while psychologists focus on solely treating the psychological response to the pain experience (Acolin, 2016). Chronic pain is a complex diagnosis that encompasses interactions between physical, psychological, and social factors that should be treated simultaneously (Seth, 2016). Treating the physical and psychological symptoms of chronic pain separately does not provide adequate treatment for the reciprocal nature of chronic pain. This can prolong the pain experience, ultimately failing to meet patient goals. The medical model of treatment, which separates out the pain experience in this way, lacks the insight into the complex interrelationship between body and mind that occurs within the chronic pain experience.

Current Alternative, Complementary, and Integrative Treatments

Treatments for chronic pain outside of the medical model are separated into three categories: alternative, complementary, and integrative. Alternative treatment is defined as “a non-mainstream practice [that] is used in place of conventional medicine” and Complementary treatment is “a non-mainstream practice [that] is used together with conventional medicine” (NCCIH, 2017). Many definitions exist for integrative treatment, however the National Center for Complementary and Integrative Health (NCCIH) categorizes integrative treatment as “bringing conventional and complementary approaches together in a coordinated way”(NCCIH, 2017). Alternative, complementary, and integrative approaches in health and wellness have recently grown within the US, with research being conducted on integrative treatment in the care of chronic pain (NCCIH, 2017).

Current complementary treatments for chronic pain such as exercise, psychotherapy, and stress management can be utilized based on the type of pain a patient is experiencing (Rasu et al., 2013). This can be beneficial in finding treatments that work best for different types of chronic pain due to its subjective nature. Although these treatments may be more effective for patients, they are limited in validity research due to the generalization of the alternative treatment category in most research (Rasu et al., 2013). Particular complementary and integrative treatments like exercise, creative arts therapies, and mental health/stress management are combined into general categories such as “Physical Therapy” or “Psychotherapy” and are not specifically evaluated or adequately represented (Rasu et al., 2013). However, other complementary therapies that have been adequately researched include biofeedback and Cognitive Behavioral Therapy (CBT), which are proven effective in pain control and management (Hsu, 2017). In the field of chronic pain management, there is work to shift

treatment away from the over reliance on pharmaceuticals and provide therapy that targets chronic pain integratively, focusing on the physical, psychological, and social complexity of chronic pain (Bradt et al., 2016; Hsu, 2017). Treatment models, such as biopsychosocial models, that integrate body awareness and self-care along with the recognition and treatment of the psychosocial factors that affect the individual, would be a more effective approach than the current medical model due to their integration of the fuller scope of symptoms (Wenzel, 2011).

A standard complementary treatment for chronic pain is psychotherapy, the common method being Cognitive Behavioral Therapy (CBT) (Andersen, 2016). CBT is a method of verbal psychotherapy which aims to treat psychological distress, change maladaptive behaviors, and help patients cope with their chronic pain through techniques such as stress management and problem solving to aid clients in regaining a sense of control over their pain (Andersen, 2016; Turk et al., 2008). CBT alone, focusing on changing behaviors and introducing coping skills, is not enough to treat the physical aspects of chronic pain. The psychological and behavioral factors of chronic pain contribute to the physical pain experience, maintenance, and the exacerbation of pain (Turk et al., 2008). As a way to incorporate body awareness in the experience of pain, mindfulness meditation has been introduced within CBT as a coping skill to foster acceptance of the condition (Andersen, 2016). Mindfulness aims to teach the individual to be aware of painful sensations, emotions, and thoughts, thereby recognizing the unavoidable nature of chronic pain and working towards acceptance (Andersen, 2016). The idea of chronic pain acceptance is for the individual to engage in activities where pain may be present, develop an awareness of that pain and no longer avoid it, in order to resolve distressful thoughts surrounding their chronic pain and reduce avoidance behaviors (Andersen, 2016). Increased mindfulness is correlated with improvement in disability and psychological functioning

including lower levels of pain related to anxiety, depression, disability, and pain catastrophizing (Andersen, 2016). However, there is still a lack in addressing the physical symptoms of chronic pain within CBT and mindfulness.

Creative Arts Therapy

Creative Arts Therapists are mental health professionals who utilize different art mediums and creative processes to treat individuals and groups with illnesses and disabilities including chronic pain. Creative Arts Therapists work with individuals and groups to improve communication and expression, and increase/integrate physical, emotional, cognitive and social functioning to better each individual's health and wellness (NCCATA, 2017). Creative Arts Therapies include Dance/Movement Therapy, Music Therapy, Art Therapy, and Drama Therapy.

The use of music has received attention as a non-pharmacological approach to pain treatment and management (Bradt et al., 2016). Listening to music recreationally as a passive and individualized activity has proven to reduce pain-intensity and opioid requirements in acute pain by methods of distraction and relaxation (Bradt et al., 2016). For chronic pain, music therapy has been utilized as a biopsychosocial approach which creates a psychotherapeutic group environment rather than an individualized activity and promotes active engagement and creativity through music-making and social interaction (Bradt et al., 2016). The process of creating music with the body and voice provides chronic pain clients the opportunity to be heard, as well as promote control over treatment rather than the passivity that comes with a pain diagnosis and pharmaceutical treatments (Bradt et al., 2016). In music therapy sessions, clients utilize music to access repressed emotions, develop creative expression, to positively reconnect to the body through toning and breathing, and promote social connection through the singing of meaningful songs as well as vocal improvisations (Bradt et al., 2016). Music therapy can be

successful in managing pain, stress, and emotions including alleviating depressive symptoms by expressing emotions through music and verbally sharing feelings within the therapy process (Bradt et al., 2016). Music therapy can increase self-efficacy and coping, improve patient perception of change, and reduce pain, but has shown no improvements in physical functioning (Bradt et al., 2016).

Dance/Movement Therapy

An integrative approach that combines the treatment of the physically, psychological, and social symptoms of chronic pain is dance/movement therapy. Dance/movement therapy is a body-based therapy that combines psychotherapy with attention placed on the body and movement, which helps to reduce the physical and emotional symptoms of those living with chronic pain. Formally, dance/movement therapy is “the psychotherapeutic use of movement to promote emotional, social, cognitive, and physical integration of the individual for the purpose of improving health and well-being” (ADTA, 2009). Dance/movement therapists utilize dance and movement to help individuals that are healthy, have mental health diagnoses, and those that are physically or mentally disabled, among many other populations (Levy, 2005). Body movement reflects inner emotions and the movement of the body affects inner emotions making the body and mind in a reciprocal relationship (Levy, 2005). Dance/movement therapy emerged from modern dance practices when early dance therapy pioneers in the 1940s worked to treat individuals with mental health disorders and children with autism (Levy, 2005).

Dance/movement therapy has grown and evolved, expanding to work with a large variety of populations and individuals, including those with medical diagnoses such as chronic pain (Goodill, 2005).

Dance/movement therapy core concepts, such as kinesthetic empathy, the therapeutic relationship, techniques, and group process, are vital within the practice of dance/movement therapy. In dance/movement therapy, empathy, or the ability for one person to understand another, is translated onto a nonverbal level through the body, called kinesthetic empathy (Chaiklin & Wengrower, 2009). Kinesthetic empathy is established through creating a movement conversation with the client, promoting an understanding through the body (Young, 2017). Kinesthetic empathy deepens the therapeutic relationship that is already present within verbal modes of therapy by synthesizing both verbal and nonverbal understanding between therapist and client (Chaiklin & Wengrower, 2009). The relationship between therapist and client within dance/movement therapy is not only emotional and behavioral, but is also physical, thus incorporating a vital aspect of understanding the needs of an individual with chronic pain on a body movement level (Young, 2017; Chace et al., 1993). The therapeutic movement relationship exists and is developed over time by sensitively perceiving the client's movement expression and adapting one's movement response to that of the client's (Chace et al., 1993). The sharing of movement is part of the embodied approach of dance/movement therapy, promoting an environment of safety, respect, and trust from which new ways of being in relationship with others can emerge (Young, 2017). Creating a space that is safe enough for the client to explore and express physically and emotionally allows for therapeutic growth to occur. The therapeutic relationship is an integral part of dance/movement therapy and is not found or is under developed in other therapeutic processes such as physical therapy and within the medical model of treatment.

Dance/movement therapy is conducted within group and individual therapy settings, which provides the clients with the opportunity to focus on their own healing process and to

connect with others. The dance/movement therapy group process promotes healing through utilizing psychotherapeutic techniques and skills that support therapeutic change, growth, and health (Schmais, 1985). Dance/movement therapists work collaboratively with clients in group or individual settings to work towards achieving a client's physical, psychological, emotional, and social goals (Schmais, 1998). Dance/movement therapy sessions allow for healthy socialization, grounding in reality, the opportunity for self-expression both emotionally and physically, and provide a safe space for clients to try new behaviors and explore the body in action/motion.

Chronic pain is experienced on both a verbal and nonverbal level, making the treatment process difficult. Patients may not be able to verbally express their pain levels to physicians and advocate for adequate treatment (Pasero et al., 2016). Dance/movement therapy is a space for those who may not be able to verbally express their pain and be understood by clinicians on a nonverbal level. Dance/movement therapy works primarily within nonverbal communication and expression, with instances of verbal processing and reflection, utilizing every available resource of communication to promote meaningful contact with the therapist and others (Chaiklin & Wengrower, 2009; Schmais, 1985). Dance/movement therapists help their clients to express themselves in many different ways to promote understanding and therapeutic growth.

There are several core techniques that are utilized with the practice of dance/movement therapy including body awareness, mirroring, kinesthetic empathy and attunement, movement observation, and rhythm and synchrony. Dance/movement therapy utilizes body awareness to promote health through the reorienting of the client to their body through many different experiences (Chaiklin & Wengrower, 2009). Examples of increasing body awareness within dance/movement therapy sessions are the use of breath, verbal and tactile cueing from the client

or therapist, sensing of the body during movement experiences, and reflection on how the body moved in space, which includes recognizing and verbally stating feelings associated with body movement, noticing where tension is being held in the body, and any other responses that may arise during movement (Chaiklin & Wengrower, 2009). The experience of mirroring is the therapist's ability to notice the movement of another, reflect it back to them, and provide a response on a body movement level and verbally, tapping into a client's physical and emotional expression (Chaiklin & Wengrower, 2009; Levy, 2005). Mirroring is utilized to convey an acceptance of the client's inner states and create a movement or verbal conversation/communication (Levy, 2005). This shows the client that the therapist takes their nonverbal communication seriously, and can help them to expand and clarify their own experience (Levy, 2005). Another tool used by dance/movement therapists which is similar to kinesthetic empathy is attunement (Levy, 2005). Attunement is a concept in which the dance/movement therapist matches the movement preferences or patterns of the client for the purpose of comfort, understanding, and to promote healthy functioning through communication and regulation (Levy, 2005). These techniques are particularly important for individuals with chronic pain, as they often feel misunderstood by others due to their pain experience. Dance/movement therapists communicate understanding verbally and nonverbally to meet the client where they are and work with them to encourage therapeutic growth.

In dance/movement therapy training, students are required to study different movement profile techniques, including Kestenberg Movement Profile (KMP) and Laban Movement Analysis (LMA) for the purpose of movement observation and assessment. Movement observation is an essential tool in dance/movement therapy, as dance/movement therapists are acutely aware of the movement dialogue between client, therapist, and others (Chaiklin &

Wengrower, 2009). Dance/movement therapists are trained to notice and assess nonverbal forms of communication, making movement observation and assessment a skill that is learned and continually developed. Through LMA, dance/movement therapists are able to observe a client's movement patterns and preferences to detect what is present and what is absent from the individual's movement. This observation of what the individual is and is not utilizing on a body movement level is then translated into an assessment, detailing the information gathered. LMA provides the field of dance/movement therapy with objective vocabulary which is used in the treatment and recording of movement observations and treatment plans (Bartenieff, 2002). Having the language or vocabulary for a dance/movement therapist to facilitate, describe, and then discuss movements with clients allows for a client's increase in body awareness and a greater understanding of the therapeutic process which occurs through movement (Bartenieff, 2002). This paper will focus on Laban Movement Analysis as a primary mode of movement observation and assessment within dance/movement therapy. Laban Movement Analysis adds to the existing dance/movement therapy structure to provide more options for physical interventions in order to treat the physical symptoms of chronic pain.

Rhythm and synchrony are skills utilized by dance/movement therapists and are core mechanisms of a dance/movement therapy session. Rhythm provides order and structure which works to integrate, inspire, and regulate clients and the environment of a dance/movement therapy session (Schmais, 1985). Rhythm taps into a human's innate functioning, such as breath, and acknowledges the external rhythms of life such as work, social interaction, and play that influence an individual's experience (Schmais, 1985). Chronic pain affects all aspects of an individual's life including work, social interaction, and activities hindering these rhythms. Within a dance/movement therapy session, these can emerge as physical and emotional themes and can

be explored through movement and verbal processing (Schmais, 1985). Synchrony within dance/movement therapy sessions enhances the connection between dance/movement therapist, client, and other, and is further supported through the use of touch, visual contact, and verbal expression (Schmais, 1985). The process of developing synchrony aids clients in resocialization, self-expression, fostering contact between the therapist and others, and promotes group cohesion (Schmais, 1985). Exploring synchrony within dance/movement therapy sessions helps with learning to move in time with others when in communication, both verbally and nonverbally and is utilized in daily life to develop stronger social skills (Schmais, 1985).

Synchrony within dance/movement therapy sessions can be an important factor in working with individuals with chronic pain. Individuals within a group who move in synchrony with one another begin to break down the barriers of communication through the development of social bonding (Schmais, 1985; Tarr, 2016). Research has shown that dance, as a group activity intervention focusing on social closeness and the synchronicity of movement, aids in the elevation of pain thresholds through the development of positive emotional states within a group (Tarr, 2016). Developing positive emotional states increases feelings of interpersonal-warmth, well-being, social motivation, and pain perception (Tarr, 2016). On a biological level, dance increases pain thresholds through the natural process of stimulating the production of endorphins and elevating the levels of opioids in the brain (Tarr, 2016). This increases a client's pain tolerance, which is diminished by the psychological symptoms of chronic pain as well as the pharmacological treatments that are prescribed to patients. In addition to the release of endorphins from the physical act of dancing, being within a group setting works to increase pain thresholds as a result of promoting socialization and commonality through shared experience (Tarr, 2016). It is common for individuals with chronic pain to feel as though they can only be

understood by other chronic pain patients (Shim, 2015). In a group of individuals who share a common illness or medical condition, social bonding increases due to the group's sense of togetherness and understanding (Tarr, 2016; Bradt, 2016).

Dance/Movement Therapy and Chronic Pain

Shim (2017) has conducted influential research on creating a model of dance/movement therapy for resilience-building in people living with chronic pain. Shim created a model and structure of dance/movement therapy sessions and interventions to use with the chronic pain population, which focused on psychological resilience to target chronic pain symptoms. Shim's research concluded that there were significant improvements in resilience, kinesiophobia, body awareness, and pain intensity with 68% of people feeling 'moderately to a great deal better' post dance/movement therapy intervention (Shim et. al, 2017). Shim's work is successful in treating the psychological symptoms and social implications as well as reducing pain severity in chronic pain. This is a large step forward towards an integrative rehabilitation model for chronic pain.

Shim's research has provided evidence that dance/movement therapy has a positive impact on body image, mood, stress, mobility, energy, movement pain, agency, meaning making, and quality of life in individuals with chronic pain (Shim et. al, 2017). Shim's findings support that dance/movement therapy is well suited to treat chronic pain due to its integration of psychological and physical symptoms into treatment (Shim et. al, 2017). Dance/movement therapists utilize many skills and techniques (both verbal and nonverbal) such as LMA/Bartenieff, improvisation, mirroring, enactment, imagery, journaling, group discussing/reflection, to promote psychological, physical, and social well-being to adequately treat the entity of the pain experience (Shim et. al, 2017). Dance/movement therapy is also utilized as a behavioral intervention that focuses on embodied and experiential modes of

assessment and treatment to improve the client's altered physical, psychological, and social behaviors including physical deconditioning, fear avoidance behaviors, and isolation/withdrawal, which are results of their chronic pain condition (Shim et. al, 2017). The effects of an embodied, movement-based experience within dance/movement therapy sessions extends past an individual's emotional distress to their physiology and behaviors, by utilizing body movement to explore an individual's aspirational thoughts, emotions, therapy goals, and current/desired physical behaviors to promote therapeutic change (Shim et. al, 2017). The effects of using body movement to act-out the pain experience or the changes that the client wants to make rather than only envisioning or verbalizing them, has a greater effect on changing the pain experience (Shim et. al, 2017). Changing the bodily experience of pain within dance/movement therapy sessions through the use of body awareness, improvisation, enactment of symbols and metaphors, imagery, mirroring, movement narratives, and Bartenieff and LMA indicates that individuals can promote their own desired physical and behavioral outcomes (Shim et. al, 2017).

Physical activity is vital for individuals with chronic pain to maintain physical function and mental health (Shim et. al, 2017). However, pain-related fear avoidance behavior is a major barrier for physical activity resulting in further disability for individuals with chronic pain (Shim et. al, 2017). Behavioral factors perpetuate physical deconditioning and reduce physical activity, contributing to the pain experience, maintenance, and the exacerbation of pain (Turk et al., 2008). Dance/movement therapy can be utilized as a behavioral intervention to address physical deconditioning by actively rehearsing and practicing physical behavior changes through the exploration of LMA and Bartenieff Fundamentals in order to revise dysfunctional movement patterns on a motor level (Shim et. al, 2017). Dance/movement therapy within the framework of behavioral interventions can work to rehearse and practice once painful physical activities in a

less painful way through alternative movement pathways such as moving one's arm across the body (cross-laterally) to reach something in front of them instead of straight forward (Shim et. al, 2017). These interventions promote accessible changes in the client's physical behaviors that at one time were avoided due to pain.

Dance/movement therapy is a strength-based modality that focuses on the client's strengths as well as their weaknesses. Providing the client with the opportunity to explore their ability as well as working to improve their pain sensations, will help to foster a sense of control and agency that is vital in the rehabilitation of chronic pain. A major difference between dance/movement therapy and other physical interventions, such as physical therapy, is that dance/movement therapy works to activate and promote an individual's motivation to engage in healthy physical and psychological behavior by allowing the client to move at their own pace, regaining a sense of agency over their body (Shim et. al, 2017). In dance/movement therapy sessions, individuals are encouraged to participate in movement at their own pace and intensity to foster this sense of control rather than being forced to perform active tasks that may be beyond their thresholds (Shim et. al, 2017). Instead of being told to adapt a physical intervention, in dance/movement therapy the clients have the opportunity incorporate many alternative interventions in collaboration with the dance/movement therapist. The self-directed and spontaneous movement approach that occurs within dance/movement therapy sessions creates opportunities for the client to enhance their self-awareness of their level of pain, to experience the ability to move more than was previously assumed, and to understand that moving reduces pain rather than worsening it (Shim et. al, 2017). These moments of self-awareness and realization lead to the restructuring of cognitive and emotional perception of pain intensity and efficacy for physical activity (Shim et. al, 2017).

Dance/movement therapy with individuals with chronic pain has been shown to reduce kinesiophobia, the fear of movement/re-injury, which is a main physical/psychological issue for individuals with chronic pain (Shim et. al, 2017). Dance/movement therapy plays a major role in reducing kinesiophobia by promoting the client's motivation for physical activity through the non-judgemental environment, self-directed nature of dance/movement therapy, peer-recognition, and support from the therapist and others (Shim et. al, 2017). Dance/movement therapy also provides the individual with chronic pain opportunities to safely explore their physical space and regain a sense of autonomy through exploration of current and available body movements (Salgado, 2010) .

Dance/movement therapy, as a psychotherapeutic approach, treats the many psychological effects of chronic pain. Dance/movement therapy is demonstrated to have a positive impact on body image and quality of life which can improve symptoms of depression such as pain tolerance, disrupted sleep, decreased energy, diminished concentration, and irritability by promoting resilience building (Seth, 2016; Shim, 2015). Psychological resilience or the “ability to withstand, adapt, and grow in the face of stressors”, is “associated with individuals’ pain attitudes and beliefs, catastrophizing tendencies, social responses to pain, coping style, and health care and medication utilization patterns in the chronic pain population” (Shim et al., 2017, p. 27). Resilience targets psychological symptoms by promoting optimism and enhanced coping through creating positive emotions (Shim et. al, 2017). The improvement of emotional well-being through resilience building has positive effects on pain intensity and mental/emotional well-being (Shim, 2015).

In addition to depression, anxiety, catastrophizing, avoidance, and isolation, individuals living with chronic pain experience body dissociation as a way to cope with physical pain (Bradt

et al., 2016). Body dissociation is the avoidance of internal experiences such as the distraction from bodily experience, separation from bodily feelings and sensations, and emotional disconnection (Price, 2007). Individuals with chronic pain tend to distance and detach themselves from their bodies, adopting a feeling of being outside of oneself and being unwhole, in an effort to protect oneself and cope with and escape their physical pain and emotional distress (Shim, 2015). The negative impact of body dissociation on the well-being of individuals with chronic pain is important to target in treatment through a process of embodiment or being present and engaged with oneself and the world, which dance/movement therapy provides through body awareness practices (Bradt et al., 2016; Shim, 2015). The pain experience and perception of disability are perpetuated by an individual's thoughts about their pain experience (Shim, 2015). In dance/movement therapy the individual works through the perpetuating thoughts linking them to body awareness and available movement, changing the behaviors and perception of pain and the body (Shim, 2015).

Individuals with chronic pain often express frustration by the “invisible and unshareable nature of pain” and express a desire for understanding (Shim et. al, 2017, p. 38). Those living with chronic pain experience social isolation, in which they separate themselves from others as a result of feeling misunderstood or that their chronic pain is not taken seriously (Shim, 2015). A way that dance/movement therapy can explore and improve social isolation is through the experience of kinesthetic empathy. Kinesthetic empathy fosters understanding, acceptance, and validation of one’s experience on a body level and a connection with others (Shim et. al, 2017). Dance/movement therapists are trained to utilize kinesthetic empathy, which is expressed through movement as “seeing and being seen” on a body level (Shim et. al, 2017, p. 38). The experience of kinesthetic empathy from the dance/movement therapist provides the chronic pain

client with the space to be understood and seen by the dance/movement therapy, making the invisible or unshareable nature of pain seen. The interaction between the dance/movement therapist and client within kinesthetic empathy provides the individual with chronic pain the opportunity to safely explore contact with another and explore interactions, and tools to utilize outside of sessions with their family, friends, colleagues, and doctors.

Shim's session structure and interventions are particularly important in contributing to a successful long-term rehabilitation model for chronic pain. Shim's 70 minute dance/movement therapy sessions began with verbal check-ins which prompted the clients to speak about their pain levels and how to manage those levels during dance/movement therapy activities (Shim et. al, 2017). The clients were asked to monitor their daily pain and energy level and to be aware of safety concerns during and outside of dance/movement therapy (Shim et. al, 2017). Movement began with a semi-guided warm up transitioning to theme development, which focused on themes that arose during the beginning of the session (Shim et. al, 2017). Shim utilized dance/movement therapy interventions such as improvisation utilizing body movement, exploring symbolism and metaphors which pertained to the client's thoughts and feelings about their body and their pain, kinesthetic imagery to engage the clients in movement to express their thoughts and feelings, mirroring between two clients or with the therapist in order to engage in "synchronous movement interactions" to reflect on each other's "body attitude, form, or quality of movement but also the perceived internal state of the partner" (Shim et al., 2017, p. 29-30). Shim's sessions concluded with breathing and stretching in order to cool down the body, journaling to reflect on one's own experience within the session, group discussion to engage in verbal conversation promoting social bonding and building relationships on shared experience, and a group movement ritual to promote a sense of closure and togetherness for the group

members (Shim et. al, 2017). Shim's session structure provides notable interventions that are to be utilized in a long-term rehabilitation model for chronic pain.

Shim's sessions culminated into two major Dance/Movement Therapy interventions, movement narratives and the "*connection dance*" (Shim et al., 2017, p. 30). Shim's "movement-based illness narratives" consisted of asking the clients "to create and perform a short sequence of movements that represents the story of self in relation to their pain trajectory (i.e., self in the past, present, and future)" (Shim et. al, 2017, p. 30). These movement sequences of past, present, and future revealed the client's attitudes and feelings towards their pain experiences. Clients presented what their functioning felt or looked like prior to the onset of their pain experience (being able to move freely without pain), how they felt in the current time of their pain experience (disabled or functioning less and with more pain), and then how they believe they will be functioning in the future (Shim, 2017). These narratives provided the clients with the space to explore their own stories with pain, and then were given the opportunity through movement to change an aspect of the present in order to change their future pain outcome (Shim, 2017). This resulted in ultimately changing the client's relationship with pain (Shim, 2017).

The second major intervention that Shim introduced to her clients was called the "*connection dance*" (Shim et al., 2017, p. 30). The *connection dance* was a movement sequence based on Bartenieff's Six Total Body Connectivities, an integral part of Laban Movement Analysis. The Six Total Body Connectivities include Breath, Core-Distal, Head-Tail, Upper-Lower, Body-Half, and Cross-Lateral (Hackney, 2002; Shim et al., 2017). Each of the connectivities denote an area and function of body movement. Bartenieff created extensive movement sequences and experientials to explore each connectivity individually and together. Shim created a movement sequence based on Bartenieff's Six Total Body Connectivities,

utilizing coordination patterns in the body to “increase overall efficiency, coordination, and flow of movement” (Shim et al., 2017, p. 30). The movement sequences of the *connection dance* and breathing exercises were taught to the clients early in the treatment program to promote relaxation and for clients to practice them independently at home in order to continue the work being done in sessions and to aid clients in navigating their pain experience while not in dance/movement therapy sessions (Shim et. al, 2017). Within dance/movement therapy sessions, clients explore and create different movement pathways to find alternatives to their current painful movements, and explore creative expression including movement narratives to express the effects of the pain experience, how they desire to feel, and any emotional or psychological symptoms that arise during the exploration of movement and verbal processing.

Laban Movement Analysis

Dance/Movement Therapy combines psychotherapy with movement observation and intervention including Laban Movement Analysis (LMA). LMA is a system of observation and notation of the moving body. LMA was created by Rudolf Laban as a system to write down dance and choreography (Bergsohn, 2003). Although this system was originally created for the world of modern dance, Laban later used his system of observation to observe and assess factory workers (Bergsohn, 2003). Laban’s work in factories was to observe the employees’ movements and create assessment and interventions to improve productivity and efficiency on the assembly lines, all based on body mechanics (Bergsohn, 2003). Laban’s work made its transition into the medical field when Irmgard Bartenieff, a physical therapist and pupil of Laban’s, used LMA and her own contribution to his work (Bartenieff Fundamentals as found in the work of *Body in LMA*) to work with children with polio in New York hospitals (Bartenieff, 2002). LMA’s history of being used to improve efficiency and body mechanics of factory workers and by Bartenieff

with polio patients and medically fragile children, makes LMA accessible in the medical field as a physical rehabilitation tool.

Laban Movement Analysis (LMA) is a method of observation and analysis used by dance/movement therapists to notice, question, and understand a client's movements. LMA provides a wide scope of movement possibilities (Hackney, 2002). The four elements of LMA, *Body*, *Effort*, *Shape*, and *Space*, can be utilized to explore movement and develop efficiency and expressiveness (Hackney, 2002). LMA is a mode of observation, assessment, exploration, connection, and awareness. LMA can also be utilized as an intervention to introduce/reintroduce the connections within the body that exist as "patterns and plans which our neuromuscular system develops for executing" body mechanics and movements (Hackney, 2002, p. 14). Introducing and reintroducing patterns and plans that are innate to the body's functionality to those with chronic pain, provides the opportunity to repattern movement in a less painful way, or find other patterns of body mechanics to accomplish similar movement. Through the four LMA elements of *Body*, *Effort*, *Shape*, and *Space*, individuals with chronic pain discover their relationship to movement patterns and are given the tools to explore current and alternative movement pathways.

The LMA and Bartenieff frameworks can be a vital aspect in the observation, assessment, and intervention of chronic pain in long-term management. LMA is used in dance/movement therapy as a movement observation tool, an assessment tool, and in intervention, making it an invaluable resource for dance/movement therapists (Bartenieff, 2002; Fernandes, 2016; Hackney, 2002). Dance/Movement Therapy with the use of LMA works to observe and repattern the body by facilitating expressivity, exploring stability and mobility, and activating motor learning to improve range of motion, body mechanics, overall functioning, and to reduce pain (Hackney,

2002; Fernandes, 2016). The dance/movement therapist's knowledge of LMA allows for the facilitation of a wide range of movement possibilities and pathways (Bartenieff, 2002). A dance/movement therapist's knowledge of LMA allows for them to meet the client's physical challenges on a body movement level and to address them within the movement process through multiple different interventions (Bartenieff, 2002).

Body, the how of moving in LMA, consists of the Bartenieff Fundamentals' Six Total Body Connectivities (Hackney, 2002). The Six Total Body Connectivities are organized sequentially based on developmental movement patterns and work to organize the body (Hackney, 2002). The six connectivities that can be explored individually or simultaneously through body movement are breath, core-distal, head-tail, upper-lower, body-half, and cross-lateral (Hackney, 2002). Each of the six connectivities provide chronic pain clients ways of exploring their bodies through functional movement patterns. Breath, on both the lung and cellular level, is essential to movement (Hackney, 2002). Breath pertains to the bulging and hollowing of the body, the inhalation and exhalation (Fernandes, 2016). All of the Body Connectivities come back to the breath, recognizing it as a vital part of body movement. Breath can be a key component in working with an individual with chronic pain. Exploring breath in relation to initiating body movement or action, such as raising one's arm or taking a step forward, can aid in finding more ease in movement. Core-Distal Connectivity consists of core support which allows for the limbs to move in and away from the center of the body (Hackney, 2002). The Head-Tail Connectivity refers to the continuum of the spine and exploring its movement range (Hackney, 2002). The Head-Tail connection is particularly important for level changes (low, mid, and high) through movement (Hackney, 2002). The exploration of head-tail movement can be important for individuals with chronic pain who may experience difficulty

with rising to standing or leaning over to promote ease of motion. The Upper-Lower Connectivity places attention on the relationship between the upper and lower body, split at the waist (Fernandes, 2016). Patterns of movement in the Upper-Lower Connectivity include yield/push and reach/pull, which articulate the grounding into the earth to then venture out into space (Hackney, 2002). Body-Half Connectivity organizes the body into right and left sides, placing particular emphasis on stability and mobility (Hackney, 2002; Fernandes, 2016). Stability and Mobility are important concepts in Laban/Bartenieff, detailing that one side of the body learns to stabilize so that the other side can mobilize, indicating that strong support allows for movement (Hackney, 2002). In chronic pain treatment, exploring stability and mobility can aid in accomplishing tasks or movement actions by developing strong support in other areas of the body to help mobilize the site of pain and vice versa. Body-Half also aligns with the functions of the brain and “aids in clarifying issues” (Hackney, 2002, p. 238). The last Connectivity is Cross-Lateral which is the developed diagonal connections that cross the body’s midline to achieve rotation, complex level change, and locomotion (Hackney, 2002). Cross-lateral movement can provide individuals with chronic pain different movement options by exploring movement that travels across the body rather than purely forwards and backwards. Each of these connectivities can be explored with an individual with chronic pain to find less painful, more efficient ways of moving and accomplishing movement tasks or actions.

Within the element of *Body*, several principles inform the observer and mover. Body Attitude, Active/Held Body Parts, Initiation-Follow, and Sequencing allow for the observer to notice the nuances of an individual’s movement patterns and preferences (Hackney, 2002). Body Attitude is one’s unique stance and organization of body parts from which an individual moves (Hackney, 2002). One’s body attitude can allude to the location of pain sensations and areas of

the body that have been affected physically or psychologically by chronic pain. A dance/movement therapist observes one's body attitude and recognizes Active and Held Body Parts, which are observable parts and areas of the body that are active in movement or that are frequently held (Hackney, 2002). Individuals with chronic pain will often hold tension around the pain site, which could be observed by the dance/movement therapist and addressed in treatment with the exploration of the six connectivities. Initiation- Follow allows for the observer to notice where the body moves from and how that movement is followed through with (Hackney, 2002). Sequencing of movement, including simultaneous, successive, and sequential, indicates the flow of the movement (Hackney, 2002). Noticing from where and how an individual initiates movement and how they follow the movement through is important for the dance/movement therapist to recognize, as possible dysfunctional or maladaptive movement patterns may have resulted from the pain experience. Breath Support/Kinetic Chains, Core Support, and Dynamic Alignment allow for structural support and developing body awareness which can be important in treating dysfunctional physical movement of chronic pain (Fernandes, 2016). Breath Support refers to the deep breathing which is the support for body movement and Kinetic Chains refers to the movements that occur during the exhalation of breath, taking advantage of the muscular impulses occurring in the body which aid in fluid movement (Fernandes, 2016). Breath support and kinetic chains can aid those with chronic pain by utilizing them to propel their movement. This can provide those with chronic pain with more knowledge and ways of moving their bodies through everyday activities. Core Support in Bartenieff Fundamentals is unlike other forms of body training which emphasize superficial musculature (Fernandes, 2016). Core Support in Bartenieff enhances and encourages the use of internal muscles for stabilization and support, allowing for the full engagement within the nuances of

body expression (Fernandes, 2016). This is made so by the freeing up of superficial muscles from “inappropriately attributed support function” (Fernandes, 2016, p. 92). Tapping into core support through movement can aid in the development of body awareness and the core as a stable based in which all movement can occur. Dynamic Alignment refers to the body’s alignment which is constantly modifying and interacting with the environment (Fernandes, 2016). Each of these principles play vital roles in the stabilization of the body and the movement experience.

Effort is the quality in which an individual moves, expressing their inner attitudes of moving (Hackney, 2002). Changes in *Effort* can be associated with changes in mood or emotion (Hackney, 2002). The quality of one’s movement may ease or exacerbate pain with chronic pain clients. Exploring different *Efforts* and finding a balance between them can aid in improving physical functioning with less pain. *Effort* is comprised of four factors, flow, weight, time, and space, which are then further broken down into two polar elements (Hackney, 2002). Flow Effort refers to the muscular tension used when moving, defined as free or bound (Fernandes, 2016). Free Flow is fluid and released or outpouring and liquid (Hackney, 2002). The muscular tension is relaxed and released. Bound Flow is controlled, careful, contained, and restrained (Hackney, 2002). The muscle tension is tight and controlled. Those with chronic pain will often hold tension in the pain site, making their movements mostly in bound flow. Being in bound flow all of the time, as a way to protect the body and the self from pain sensations, can cause strain on the body. Effort Flow can become expressive statements, linking to feelings that are expressed within the body tension (Hackney, 2002). Weight Effort includes the polarities of Light and Strong in using the weight of the body (Hackney, 2002). Light Effort qualities include moving delicately or with airiness, buoyancy, or with fine touch, whereas Strong Effort includes

powerfulness, impact, forcefulness, or firm touch (Hackney, 2002). Weight Sensing refers to the action of sensing the weight in the body rather than using the weight (Hackney, 2002). There can be a passive attitude towards weight, called Passive Weight, in which gravity is the active force (Hackney, 2002). One can be limp, weak, wilting, flaccid, or heavy, totally collapsing and giving in completely to gravity (Hackney, 2002). The use of weight can often denote psychological states such as depression or anxiety. Targeting weight effort and sensing with individuals with chronic pain can aid in working through psychological symptoms by exploring the polarities to find a balance between strong and light, passive and active. The next *Effort* factor is Time Effort, which refers to one's inner attitude towards time, either Sustained or Sudden (Hackney, 2002). Sustained is the indulging in time, lingering, prolonging, leisurely, and gradual, whereas Sudden is an urgent, quick, instantaneous, and staccato attitude towards time (Hackney, 2002). Exploring both sustained and sudden to find an individualized balance in time may help with comfort or minimizing pain sensations when active. Lastly, Space Effort refers to the polarity of Direct and Indirect and how one gives attention to the space (Hackney, 2002). Direct Space Effort is giving active attention to one particular thing in space whereas Indirect is giving active attention to many things in space at once (Hackney, 2002). Direct is single-focused and channeled and Indirect is multi-focused and flexible attention (Hackney, 2002). Direct and Indirect Effort can be useful in working with individuals with chronic pain. In exploring several different movement variations through direct and/or indirect body movement, the individual can find the most effective way to accomplish tasks with less pain.

Shape is what forms the body makes in relation to the self and the environment (Hackney, 2002). Shape consists of different areas including Shape Flow Support, Shape Change, and Shape Qualities (Hackney, 2002). Exploration of Shape can aid an individual with

chronic pain by discovering many different variations and pathways of moving. Shape Flow Support is the basic changes in the body during the process of breathing (Hackney, 2002). Shape Flow is essentially the relationship of the body to itself (Hackney, 2002). Exploration of Shape Flow's relationship to the body can be utilized to uncover and recognize an individual's relationship with their body. For those with chronic pain who may experience psychological symptoms such as body dissociation, Shape Flow can be a start in noticing the body and coping with pain sensations. Shape Change is the inner attitude about changing the form of the body, whether due to the self or the environment (Hackney, 2002). Shape Change includes Directional Movement which is the location of change, creating a bridge to the environment (Hackney, 2002). Dimensional Movement can be spoke-like, which is a linear expression of body shape, or arc-like, which is arcing expression of body shape (Hackney, 2002). The final mode of Shape Change is Carving which is "creating or experiencing volume in interaction with the environment" (Hackney, 2002, p. 242). Exploring Shape Change again provides different ways of moving and options for an individual with chronic pain to find less painful movement alternatives. Shape Qualities provide information about the process of changing body shape (Hackney, 2002). There are six Shape Qualities: Rising/Sinking (up and down), Advancing/Retreating (forward and backward), and Spreading/Enclosing (opening and closing) (Hackney, 2002). These Shape Qualities are described as the action of "towards where" the body shape is changing (Hackney, 2002, p. 242). The spatial pull is what influences the quality of one's body movement in terms of shape change (Hackney, 2002).

Space provides information about the use of the mover's kinesphere (their use of space) and whether the movement is Dimensional, Planar, or Diagonal (Hackney, 2002). One's kinesphere is the personal space surrounding the body (the distance one can reach all around

their body without taking a step) which can be explored in the terms *Central*, or radiating out from and coming back to one's body center, *Peripheral*, or reaching to the out edges of one's personal space, and *Transverse*, or moving between the edge and the center (Hackney, 2002). Kinesiophobia is a common symptom that comes with chronic pain, which can be treated through the recognition and exploration of an individual's kinesphere by exploring movement that may be painful but also finding movement and physical expansion that is not painful. Spatial Dimensions include Vertical, or up/down expressing height, Sagittal, or forward/backward expressing depth, and Horizontal, or left/right expressing width (Hackney, 2002; Fernandes, 2016). When the Spatial Dimensions are combined into a movement sequence called the Defense Scale, they can be utilized as a tool and technique that can reduce anxiety by providing the client with an experience of physical stability (Bartenieff, 2002; Fernandes, 2016). Exploring the Defense Scale with individuals with chronic pain can aid in the reduction of anxiety symptoms by providing stability in movement and comfort in space (Bartenieff, 2002; Chaiklin & Wengrower, 2009). Spatial Planes are also described in terms of Vertical, Sagittal, and Horizontal, but the planes include two spatial pulls at once. The Vertical Plane combines up/down and right/left, the Sagittal Plane combines forward/backward and up/down, and the Horizontal Plane combines right/left and forward/backward (Hackney, 2002). Diagonals combine three different spatial pulls, i.e. left/forward/down or right/backward/up (Hackney, 2002). The exploration of the planes again provides the individual with information about how they take up their space and the freedom to explore alternative of moving.

The integration of the LMA/Bartenieff elements *Body, Shape, Effort, and Space* is what makes dance/movement therapy not only psychosocial rehabilitation but also a source for physical rehabilitation. Dance/movement therapy provides the mode of creative expression for an

individual with chronic pain to express their frustrations and distress within a psychotherapeutic framework, while LMA/Bartenieff provides the mode of improving physical function in a process that is non-prescriptive. Utilizing LMA/Bartenieff principles such as the six connectivities, exploration of the body moving in space, the shape that the body utilizes to achieve tasks, and the effort in which the movement is produced helps to increase efficiency, coordination, and flow of movement in those with chronic pain (Shim et. al, 2017).

LMA/Bartenieff principles can be used to discover “other routes that can be followed to retain missing perceptions” of movement (Bartenieff, 2002, p. 148). Moving through each principle in LMA/Bartenieff allows for the client and the therapist to recognize the client’s painful sensations/movements, their dysfunctional movements or avoidance behaviors, and find other options of moving that could produce less pain and discomfort as well as achieve tasks that may have once been painful.

Building a Better Model for Chronic Pain Rehabilitation

The current medical model of chronic pain rehabilitation is treating a diagnosis rather than the individual managing that diagnosis. This treatment is missing the integration of physical and psychological symptoms, making the current model of rehabilitation fragmented and ineffective for the long-term management of chronic pain. This calls for a shift in the chronic pain rehabilitation model, with a new focus which reaches deeper into the effects of chronic pain on physical, psychological, and social health. In rehabilitation, the overall goals expressed by chronic pain patients are relief from severe pain, to maintain function, minimize side effects from medications and the pain experience, and to address psychological distress (Paterson et. al, 2016). Dance/movement therapy aims to address all of these goals over short-term and long-term treatment.

This rehabilitation model is influenced by and built upon the dance/movement therapy interventions of Shim's work with chronic pain clients. Shim's model of dance/movement therapy for resilience-building in individuals with chronic pain is the main source of dance/movement therapy work and intervention, which highlights psychological resilience as the main mechanism for improving treatment. Shim's dance/movement therapy session structure, including the use of Bartenieff Fundamentals, will be expanded and built upon to bring additional focus to the treatment of physical symptoms. LMA provides structure and intervention options within the dance/movement therapy setting to treat the physical symptoms of chronic pain. The dance/movement therapy and LMA rehabilitation model that is to be presented provides a better model of long-term rehabilitation in the treatment of chronic pain.

The initial intake and observation for this model would include three areas of information collection: a) psychological assessment through a Psychosocial Assessment, b) The Brief Pain Inventory (Cleeland, 1991), and c) The Coding Sheet For Detailed Laban/Bartenieff Movement Analysis (Fernandes, 2016, p. 290-2). Each intake assessment gathers vital information about the client and their pain experience. The Psychosocial Assessment would be used to gather the necessary background information about the client including their psychological and social histories. The Psychosocial assessment would assess the individual's psychological state or well-being such as the level of psychological distress including depression, anxiety, and social stressors that may be caused by or exacerbating their chronic pain. The Brief Pain Inventory (Cleeland, 1991) assesses the individual's physical symptomatology based on pain intensity, pain site, and pain during daily activities. the Coding Sheet For Detailed Laban/Bartenieff Movement Analysis (Fernandes, 2016, p. 290-2) is a form that documents movement observation. The dance/movement therapist observes movement patterns and preferences, and the coding sheet is

used for the documentation of the elements of LMA (body, effort, shape, and space). The coding sheet allows for the dance/movement therapist to assess and document the individual's body mechanics, fear avoidance behavior, and overall pain sensations. These three documented intakes would be used by the dance/movement therapist to create an integrative assessment and treatment plan that addresses all aspects of the client's pain condition and experience.

Dance/movement therapy interventions for this population would be created from the information collected from the three detailed observations/assessments as well as through the therapeutic process in collaboration with the client. Dance/movement therapists are trained to pick up movement cues provided by the client, making each session different and unique.

Whereas physical therapy and other therapeutic interventions are prescriptive and dependent on a final product, dance/movement therapy provides an organic process that can be altered in the moment for the benefit of the client. There are various examples of dance/movement therapy interventions that could be utilized and altered given information from the client.

Dance/movement therapy interventions for chronic pain management would include breath and meditation, as well as guided imagery. Breath is helpful in calming pain sensations, when breathing deeply into the area of pain. Meditation, along with imagery, is utilized to stay in tune with the body through body scans and imagery tailored to alleviate pain. It can also be used to promote relaxing thoughts and to allow for the client to escape from the pain in a therapeutic way. Imagery such as melting ice or water can help to calm the nervous system and provide temporary relief to pain symptoms. Imagery that takes the client away from the body in the present moment, such as imagining that they are on a beach or in a meadow, or any place that they feel peace and calmness, can also help to provide a temporary distraction from always being aware of pain sensations and being in their bodies. The dance/movement therapist can facilitate

these meditations and teach the clients to use this skill at home to provide relief. Interventions such as open or guided improvisation explore connections between one's pain and the physical, psychological, and social effects of pain. Exploring these within the dance/movement therapy setting allows for the client to engage in the deepening affect and emotional content, discover new behavior options and movement pathways, expand symbolic material, create images, and develop movement metaphors for transformation, integration, clarity, or catharsis. The dance/movement therapy supports and helps to promote the improvisation, where the client can feel seen and understood for their experience. Clients within a dance/movement therapy session have the opportunity to explore the interaction of meaningfulness, activities of daily life, and pain through movement bridging together the real life effects of the physical, psychological, and social aspects of the pain experience. Offering the exploration of the meaningfulness of pain in a client's life helps to connect with one's own pain experience and to make interpersonal connections. Shim's intervention of "movement-based illness narratives" (Shim et al., 2017, p. 30), where clients create movement stories to express how they felt prior to the pain onset, during the pain experience or now, and how they anticipate their future, explore the client's pain experience in context to their life trajectory (Shim et. al, 2017). The movement narratives foster a sense of acceptance through recognizing the past, transitioning to seeing the present as the pain persists, and then anticipating the future with a positive outlook (Shim et. al, 2017). During the verbal processing of the movement narratives, Shim offered to the clients the option of changing their narrative in the present, in order to recognize and encourage a more positive outcome for the future. The therapeutic process and setting allow for the client to explore making changes to their narrative of what can be done in the present to feel better in the future. Clients rewrote their narratives (cognitively and in movement) and changed them physically as they performed them

in movement. Verbal processing of the sessions with the dance/movement therapist helped clients to reflect on their experience within the overall session, any connections made, their pain experience, their emotions, thoughts, and concerns, as well as growth progress.

Within the dance/movement therapy framework, the LMA/Bartenieff interventions for chronic pain include exploring the four LMA elements, *Body*, *Effort*, *Shape*, and *Space*. Exploring *Body* or Bartenieff's patterns of connectivity would work to repattern dysfunctional body movement. Like Shim's *connection dance* (Shim et. al, 2017), Bartenieff Fundamentals would be explored by the client to improve the physical connections of the body. For example, if a client has lower back pain, exploration of the upper-lower connectivity while lying on the floor may cause pain. If the client were to invite more use of breath while exploring the upper-lower connection, the pain intensity may decrease. The client could explore other connectives such as head-tail (more movement in the spine may warm the muscles of the back allowing for more range of motion), or cross-lateral (across the midline of the body rather than separating the body movement into strictly up and down, increasing movement options) which elicit different pathways for achieving the goal of decreasing pain in movement. Exploring different *Effort* qualities may allow the client to recognize which qualities cause pain or alleviate their pain during ADLs or improvisational movement. The *Effort* qualities to explore are bound vs free, direct vs indirect, strong vs light, and sustained vs quick. For example, if the client experiences chronic pain in their arm and they are holding tension in that area they are bound. Bound flow is controlled and restricted movement quality, which may aid the individual in the short term for minimizing pain during movement but remains restrictive over the long-term. Exploring *Effort* qualities with the client can aid in recognizing an individual's current *Effort* qualities both with and without pain, which *Effort* qualities may be causing or exacerbating pain, and which *Effort*

qualities can be explored to alleviate pain. Exploring *Shape*, such as ShapeFlow, or inherent movement such as breathing, can be an important tool in the management and alleviation of pain. Shape Change, which includes carving, curving, and spoke-like movements, aids in recognizing current preferences/patterns which may be causing or exacerbating pain, and which can be explored to alleviate the client's pain. Exploring *Space* and the use of the kinesphere, taking up space and using the body to extend outward, promotes the development and improvement of positive self-image confidence, autonomy, and control.

In individual and/or group sessions, the clients would explore their relationship to their body, their pain, and how this affects their lives. Working with the dance/movement therapist, the clients would safely explore their bodies and work with the LMA framework to explore new or different ways of achieving their physical goals of pain relief and maintaining function. Creating or recognizing new and different pathways and opportunities of moving allows for the individual living with chronic pain to explore other body mechanics to possibly find less painful solutions or better ways of coping with painful sensations. Working with the dance/movement therapist, the clients would safely explore their emotional and psychological connections with pain by exploring therapeutic interventions such as breath and meditation, imagery, movement narratives, improvisation, meaningfulness, and verbal processing to meet their goals of increasing quality of life, decreasing psychological symptoms, and coping with the side effects of medications and chronic pain.

Discussion

Building a better model of rehabilitation is necessary for the effective treatment of an individual's physical, psychological, and social symptoms within chronic pain conditions. Dance/movement therapy bridges together the different therapeutic strategies to treat these

symptoms that are now fragmented within current medical treatment, to provide an integrative rehabilitation process. Dance/movement therapy has demonstrated to treat the psychological symptoms and social implications of chronic pain successfully, and decrease pain severity (Shim et. al, 2017). The addition of LMA contributes a structure in which the physical symptoms of chronic pain can be treated in long-term management. Dance/movement therapy using LMA/Bartenieff Fundamentals as a rehabilitation model for chronic pain creates more physical and psychological possibilities, where the client can adapt with more freedom and choice as well as a wealth of movement options.

Within this model of rehabilitation, dance/movement therapists would conduct the initial intakes utilizing a more integrative system of verbal and nonverbal assessment, enabling the dance/movement therapist to gather information that may go unrecognized in other models. This ultimately benefits the client in receiving a fuller picture of their pain experience. This wider scope in assessment provides several potential avenues for dance/movement therapy treatment interventions that are better suited for each client. Dance/movement therapists utilize the knowledge of their LMA assessment to note imbalances or deficiencies, which will be addressed as part of the complexity of chronic pain rather than with a singular focus with “point by point prescriptions” (Bartenieff, 2002, p. 148). LMA as a vital tool in dance/movement therapy rehabilitation would be utilized in observation/assessment to recognize the client’s movement patterns and preferences in terms of *Body*, *Effort*, *Shape*, and *Space*, to gather information and inform their treatment interventions. This provides a direction in treating the physical symptoms by working with the client to explore new or different movement patterns and pathways to find less painful alternatives and develop movement strategies to cope with pain sensations. Dance/movement therapists take the information and interventions further by adapting within

sessions to meet the needs of the client(s), working collaboratively to find various new or different movement pathways rather than a singular fix prescribed to the client.

LMA provides a wide range of interventions that can be utilized by the dance/movement therapist in treating a client's physical deconditioning. Working with the LMA framework in dance/movement therapy sessions gives the client the opportunity to explore their connections to their bodies, their quality of movement, the way that they achieve tasks mechanically, and to how they move through the space around them. For example, with a client who has shoulder pain, exploring *Body* by utilizing breath to move their arm on the exhale and recuperate on the inhale can reduce pain during physical function. In exploring *Shape*, instead of the client reaching for a book on a shelf with spoke-like movement (extending one's arm straight out in front of them) which may cause pain, the client can grab the book off the shelf with curving or carving movements changing the trajectory of their arm. In exploring *Effort*, a client might discover that they are in bound flow when reaching for that book on the shelf or brushing their teeth, and that it has a straining effect on the body that can exacerbate pain. Exploring free flow and lightness can reduce tension and tightness in the body during these actions, encouraging more ease in motion. With the help of the dance/movement therapist, the client can find a balance between effort qualities to help improve their own physical functioning. In *Space*, a client with shoulder pain may refrain from stretching their arm(s) out to the sides or above their head because of the fear or actuality of pain. Working with the client to stretch their arms out to the sides of them, making an expansive body shape such as an X, can have a positive impact on confidence. The act of taking up more physical space than the client may be used to within their pain experience can be a vulnerable experience that can be explored through the psychotherapeutic process but also encourages the client to connect to themselves and the world

around them. LMA and Bartenieff provide so many more options and alternatives for the client in how to move.

Dance/movement therapy as a rehabilitation process provides a space where painful and non-painful physical movement can be assessed, explored, and managed. Developing a sense of control over pain and finding a sense of confidence in movement through dance/movement therapy is a necessary component to healing with people who suffer from chronic pain. Even though dance/movement therapists are able to identify areas of deficiencies by using LMA, dance/movement therapy is a strength-based approach which not only addresses the deficiency but also works with the individuals on their strengths, a highly appropriate methodology for treating chronic pain. For example, if a client has chronic pain in their back, dance/movement therapy will not only explore the use of Bartenieff Fundamentals such as head-tail or upper-lower connection to improve mobility of the back, but will also encourage the exploration of their limbs with *Effort* qualities to highlight the powerful expressiveness of the rest of the client's body. It is particularly important for clients to explore both the pain experience and the parts of the body that are not affected by pain, in order to promote confidence in body movement rather than maintaining a constant focus on the areas that are weak or disabled. Acknowledging the individual's abilities rather than a constant focus on their disability promotes an increase in positive self-image.

Bringing together the treatment of physical and psychological symptoms in this dance/movement therapy LMA rehabilitation model is at the core of providing better care by meeting the many needs and goals of this population. Treating physical and psychological symptoms within one rehabilitation model improves an individual's overall functioning. Within the dance/movement therapy rehabilitation model, the client embodies new physical pathways

and develops the knowledge to utilize them in improving physical function in their everyday lives. Exploring other pathways in an effort to find one or several that cause less pain not only reduces painful sensations, but has an impact on decreasing fear avoidance behavior, depression, and anxiety by giving the individual the motivation to accomplish daily tasks and activities.

The use of dance/movement therapy mechanisms in the rehabilitation of physical and psychological symptoms fosters a psychotherapeutic environment where emotional distress is improved through verbal and nonverbal means of expression, the therapeutic relationship, social support, and improving coping skills. Individual dance/movement therapy sessions allow for clients to focus on their own pain story, while group dance/movement therapy sessions provide invaluable social support which is not available within the current medical model of treatment. Working with a group of individuals that have the same chronic pain diagnosis allows for the opportunity to discuss and explore verbal and nonverbal coping skills that have been successful for other clients. As the physical symptoms can reduce psychological symptoms, working through psychological distress also increases pain tolerance and reduces physical pain sensations.

A key component of the implementation of this model would be maintaining a safe environment, a necessary element of dance/movement therapy. Safety is built in part by the therapeutic relationship, which is developed within psychotherapeutic models. Dance/movement therapy develops not only a traditional therapeutic relationship with the client but also develops a therapeutic movement relationship which exists on a body level, fostering an understanding of the experience that is happening within the client's body (Young, 2017). The environment that dance/movement therapy creates allows for the therapeutic process to fully unfold, addressing the physical, psychological, and social barriers of chronic pain. For example, in moments of kinesthetic empathy or mirroring in a session, adapting the client's body attitude or movement

phrase by the dance/movement therapist provides a glimpse into what the client is feeling physically and psychologically. This creates a conversation between therapist and client where their pain experience can finally be understood.

Dance/movement therapy allows for the exploration of the meaningfulness and meaning-making of the pain experience in the client's life, which is absent from other rehabilitation systems. In other rehabilitation systems, the client is improving upon body mechanics or masking pain with medication, whereas in dance/movement therapy, the client has the opportunity to verbalize and move out (dance/non-verbally) the context of their pain and how it affects the meaningful parts of their lives. For example, a client with chronic pain may experience painful sensations when lifting objects, no matter how heavy or light. The client is a new grandparent and experiences pain when attempting to hold their grandchild. Not only is the physical pain sensation an issue that would be explored but also the meaningfulness that this client cannot hold their grandchild without pain would be explored. Does this cause them to not hold that baby? What are the effects of that physically, psychologically, and socially? Meaning-making is the shift between a person's negative emotional states that are caused by the pain experience and the positive emotions from a change in the client's physical and psychological perspective of that pain (Shim, 2015).

Dance/movement therapy treatment encompasses the physical and psychological symptoms, and social implications of chronic pain. The current medical model inherently does not. With one third of the US population living with chronic pain and not receiving adequate treatment, a better model of rehabilitation that is effective is necessary. Dance/movement therapy and Laban Movement Analysis provide that better model for rehabilitation that can be effective for those living with chronic pain.

Conclusion

Dance/movement therapy needs to be provided as the first line of rehabilitation for chronic pain within the current medical model. The constructed dance/movement therapy LMA rehabilitation model is a theoretical framework for the long-term management of chronic pain. The dance/movement therapy LMA rehabilitation model integrates the treatment of the physical symptoms, psychological symptoms, and social implications of chronic pain, making it a more suitable and effective treatment for individuals living with this condition. Dance/movement therapy and LMA provide the freedom of expression, choices, and tools to cope with the pain experience psychologically and decrease dysfunctional movement by finding more movement possibilities and alternative movement pathways through the LMA/Bartenieff framework. Further research should be conducted on the clinical application of this new dance/movement therapy LMA rehabilitation model, testing its effectiveness. Access to pain specialists and dance/movement therapists in rehabilitation settings should be expanded to promote effective and successful long-term management for chronic pain.

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