PHYSICAL THERAPY INTERVENTION IN CHILDHOOD ASTHMA: MYOFASCIAL RELEASE TECHNIQUES AND MASSAGE

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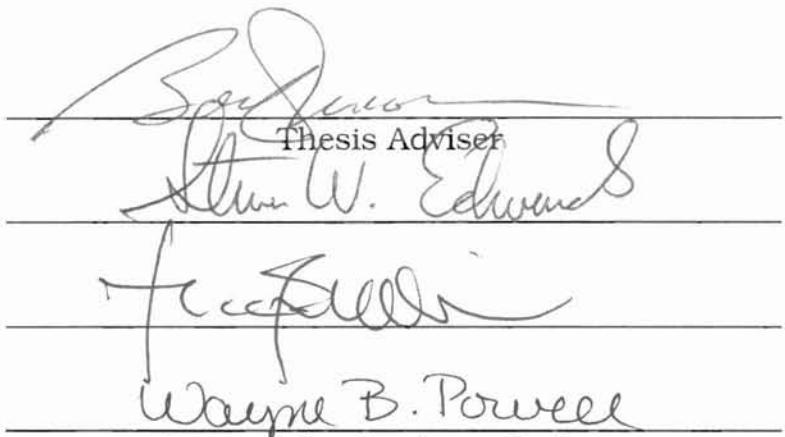

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CHAPTER I

INTRODUCTION

> "To have asthma is like having a disease that makes you allergic to life itself. The very air you breathe can make you sick. You can't play outside when it's cold or when it's windy or when the air is polluted. You can't be around smoke or fire. You can't have a pet. You can't exercise. You can't even go to school. You can't wear cologne; you can't even be around it. You practically have to live in your room like a prisoner. Overall, asthma is not a good disease to have. My sister hates me because she can't ride horses (which she loves to do). My parents fight constantly because my mom says that my dad doesn't take the same precautions that my mom does. But my dad says my mom is just being extreme. When I'm having an asthma attack, I can't breathe. I feel like I'm choking and I can't control my coughing. I also feel like I have to breathe hard, which makes my lungs move faster and I don't like that one bit! I am learning to manage my asthma by taking asthma medicine, which helps me breathe, but makes my heart race. I wish the doctors could find a cure for asthma so I – and everyone else - could be happy."
> Ryan Veranich, age 11 (1999)

Childhood asthma affects not only the involved child but also entire family. Emotional as well as financial stresses burden the family. The disease is a chronic worry shadowing every aspect of each day, since every activity and action must be examined as to the impact it will have on the asthmatic child. Despite considerable advancement in the pharmacological treatments available, the number of cases of asthma in the United States grew by more than 150 percent between 1980 and 1998. (Borenstein, 1999) In 1988, asthma-related health care expenditures exceeded $4 billion. (National Institute of Health, [NIH] 1991) By 1999, that figure had increased to $14 billion. (Borenstein, 1999)

More than 17.3 million people in this country suffer from asthma, and the number of cases is growing. The incidence of children under 4 with asthma increased from 1 in 45 in 1980, to 1 in 17 in 1994. (Borenstein, 1999). African-Americans have an asthma rate about 14 percent higher than whites, and inner city children have up to three times the rate of asthma compared to the rest of the country. (Borenstein, 1999)

Considered to be a chronic condition that must be managed, little help other than often expensive pharmacological intervention has been offered for childhood asthma. Families are told to use plastic mattress and pillow covers, eliminate carpets and drapes, use electronic air filters, and avoid smoke and pets. Physical therapy intervention to this date has been limited to developing exercise programs to counteract the effects of long-term medication use, postural drainage techniques to help loosen excessive bronchial secretions, and relaxation techniques to lessen the anxiety of the asthma attack.

Gillespie and Barnes (1990) suggest a physical therapy intervention that they claim may beneficially affect the course of asthma in children. Myofascial Release (MFR), a physical therapy stretching technique, has been cited anecdotally by Gillespie (1992) and Silva (1994) as a means of lessening asthma symptoms.

MFR is a gentle, non-traditional stretching technique that attempts to normalize tight fascia. Fascia, or connective tissue, is found throughout the body, enveloping all organs, muscles, nerves, and blood vessels as well as muscle fibers, even surrounding structures at the

cellular level. Although not typically considered in the course of medical testing, a tightened fascial system has been implicated in cases of chronic pain, where there is no obvious causative factor. Gillespie and Barnes (1990) theorize that a tightened fascial system in the child, whether from a traumatic birth, or childhood bumps, bruises and falls, could cause abnormal pressure on the lungs, the autonomic nervous system, or the cranial nerves supplying the pulmonary system, causing a hyperresponsive state, leading to the asthma. The researcher of this study applied Gillespie and Barnes' techniques to her own asthmatic child, at the age of 3 and one half years old, in 1992. The child had significant relief of asthmatic symptoms within the first year following treatment, and since then has had a complete cessation of asthma symptoms. Although clinical studies of myofascial release are beginning to appear; none address the use of this technique with asthmatic children.

Statement of the Problem

The problem of the study was to determine, in a clinical setting, the effects of either massage or myofascial release techniques on the frequency and severity of asthma episodes in children, and on the medication needs of these children.

Delimitations

The study was delimited to:

1. Ten children, between the ages of 5 and 12, diagnosed as asthmatic, with documented medication usage and the number of episodes over the past two years.

2. The subjects were free of orthopedic or neurological conditions.

3. The subjects were included in the study only while they were free of: symptoms of asthma; a febrile state; or systemic infection. Occurrence of any of these states required that the subject temporarily withdrew from the study, until they returned to an asymptomatic state.

4. A legal guardian accompanied all subjects at all times.

Limitations

The limitations of this study were:

1. The sample size of this study (n=10) was small, requiring caution in inferring application of the data to the population of asthmatic children.

2. Asthmatic triggers, such as pets, exercise, cold wind, and pollen were not controlled.

Assumptions

The study was based on the following assumptions:

1. The subjects in the groups represent the population of asthmatic children in Stillwater.

2. Parents completed the diary honestly and accurately.

3. Subjects reported any adverse effects honestly and accurately.

4. The seasonal effects on asthmatic episodes for the two years prior and the one-year following the study were similar.

Hypotheses

The following hypotheses were tested:

1. The medication needs of the two groups during the year following this study will be similar to the levels of the previous two years.

2. There will be no difference in the number of asthmatic episodes of the group members, comparing the average of the previous two years and the year following inclusion in this study.

3. Asthmatic episodes occurring in the year following the study will be similar in nature to those of the previous two years in both groups.

Definitions

For the purpose of this study, the following definitions are provided:

Asthmatic Episode: The period of time during which the subject experiences shortness of breath, increased difficulty in breathing,

wheezing during expiration, and a decrease in the peak flow volume of at least 25% of personal maximum.

Histiocytes: Macrophages of the loose connective tissue. (Blakiston's New Gould Medical Dictionary, 1956)

Leukocyte: One of the colorless cells of the blood. (Blakiston's New Gould Medical Dictionary, 1956)

Lymphocytes: Cells formed primarily in the lymphoid tissue, morphologically identical with a class of leukocytes in the peripheral blood. (Blakiston's New Gould Medical Dictionary, 1956)

Myofascial Release Techniques: "A nontraditional stretching technique, addressing the fascial system throughout the body." (Barnes, 1992; Gillespie and Barnes, 1990; Greenman, 1996; Manheim-Kaplan and Lavett, 1988)

Massage: "The application of gentle pressure along the lines of the muscle fibers." (Beard and Wood, 1964)

Phagocytic: A cell having the property of engulfing and digesting foreign or other particles or cells harmful to the body. (Blakiston's New Gould Medical Dictionary, 1956)

Polymorphonuclear leukocytes: A highly motile and phagocytic leukocyte having an irregular-shaped and lobulated nucleus. (Blakiston's New Gould Medical Dictionary, 1956)

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to examine a specific physical therapy intervention on the number of asthma episodes and medication needs of asthmatic children. The specific physical therapy interventions utilized, myofascial release techniques, are non-traditional stretching techniques designed to relieve tension and tightness of the connective tissue throughout the body. Massage to the posterior thoracic region was given to one group of children as a control treatment; the myofascial release treatment was considered the experimental group.

Asthma

The National Institutes of Health (NIH, 1991) has defined asthma as "a lung disease with the following characteristics:

1) airway obstruction that is reversible (but not completely so in some patients) either spontaneously or with treatment;

2) airway inflammation; and

3) increased airway responsiveness to a variety of stimuli".

The development of airway obstruction is responsible for the clinical manifestations of asthma, and bronchial smooth muscle contraction is a primary obstructive abnormality in asthma. Airways narrow because of bronchospasm, edema and mucus plugging. (NIH,

1991) Airway inflammation is considered to be a primary mechanism responsible for hyperresponsiveness in asthma. (NIH,1991) It has also been suggested that changes occur in the parasympathetic control of airway function in the asthmatic. (Guilleminault, et al. 1988, Weiss, 1975).

Primary control of the symptoms of asthma has been pharmacologic in nature; manual therapeutic measures are not considered standard in the management and care of asthma. In the early 1940s, a German physical therapist developed a connective tissue massage technique, and described its use for various dysfunctions, including asthma. (Walther, 1978) This may be the first attempt to treat asthma by manipulating the connective tissue. However, this massage technique is deep and aggressive, and is not used in the United States. Gillespie and Barnes (1990) describe physical therapy techniques which can be used in treating asthma that are gentle, with only light pressure being applied. The treatment of asthma by addressing the fascia or connective tissue is new and as yet undocumented in U.S. journals. A brief review of the anatomy and physiology of the involved systems is useful at this point.

The Pulmonary System

The trachea is formed of cartilaginous partial rings in the anterolateral aspect. An elastic muscle membrane, the trachealis muscle, joins the posterior ends of the rings. Active contraction of this

muscle causes a narrowing of the tracheal lumen. Internal or deep to the cartilage and muscle layers of the trachea is a connective tissue meshwork containing nerves and mucus secreting glands. Smooth muscle is found throughout the tracheobronchial tree. (Weiss, 1975)

Bronchial smooth muscles play a primary role in the narrowing of the airways, which is a normal reaction to foreign stimuli. In the asthmatic, the bronchial constriction is abnormally severe and produces impairment of the respiratory function. Medications, which reverse bronchospasm, have been found by the NIH (1991) to be fundamental in the management of asthma.

Internal to the cartilaginous layer of each bronchus is a network of elastic collagenous, reticular, and smooth muscle fibers. Nutrient capillaries, lymphatics, and nerves are interwoven throughout this connective tissue and muscle layer which also contains mucous glands, blood elements (including lymphocytes and polymorphonuclear leukocytes), and many tissue mast cells with histamine granules. (Weiss, 1975).

Autonomic innervation of the tracheobronchial tree is provided primarily from afferent fibers of the vagus nerve, and secondarily by some glossopharyngeal and trigeminal fibers. Parasympathetic efferent fibers are provided from the vagus nerve to the smooth muscles and glands of the tracheobronchial tree. These produce smooth muscle contraction, airway constriction, glandular secretion and vasodilatation. Sympathetic efferent fibers enter the thorax by passing directly from the

thoracic ganglia. These fibers relax bronchial smooth muscles, inhibit glandular secretion and cause vasoconstriction. (Weiss, 1975).

The Upper Quarter

There is a direct link between the pulmonary system and the body's upper quarter, which includes "the cranium, mandible, temporomandibular joint (TMJ), dentition, upper and lower cervical spine, cervicothoracic junction, upper thoracic spine, first and second ribs, sternum, and shoulder girdle. Each of these are connected via soft tissue comprising muscles, ligaments, fascia, and tendons, as well as interrelated neural innervation, circulation, and lymphatic drainage." (Mannheimer, Attanasio, Cinotti, and Pertes, 1989) The autonomic nervous system and the immunologic system are also important components of the upper quarter.

The TMJ is an intrinsic part of a larger system, the stomatognathic system, which is a number of systemically related organs and tissues that function as a whole, in mastication, swallowing, respiration and speech. It also directs the intricate postural relationships of the head, neck, tongue, and hyoid bone, and movements of the mandible as well. Impaired physiological function results in breakdown not only of an individual tissue but also of the interdependent structures and eventual function of the other parts, thus setting up a chain reaction. (Hertling, 1983)

Symmetrical temporomandibular joint function relies upon symmetrical temporal movement. (Greenman, 1996) The temporal bone and mandible function directly in relation to the attached muscles, fascia, ligaments and soft tissues. (Gillespie, 1990) The hyoid bone has no bony articulation; it attaches to the mandible via the suprahyoid muscles, and to the clavicle, sternum and rib cage via the infrahyoid muscles. (Mannheimer et al., 1989)

A faulty relationship between the mandible and maxilla may result in faulty posture of the cranium upon the first and second cervical vertebrae, or an imbalance between these two vertebrae may result in symptoms referable to the mouth, ear, face, or even the thoracic cavity. (Hertling, 1983); Kraus, 1988) states that physiological functions including respiration are dependent on maintenance of a sufficient nasopharyngeal space and may be related to craniocervical posture.

Kraus (1988) cites authors who have published studies of head postures that have revealed that, on the average, extension of the head relative to the cervical column was associated with, among several traits, a small nasopharyngeal space. Guilleminault et al. (1988) studied two groups of asthmatics, one group of ten men and the second a group of five teenagers, revealed that all 15 had abnormally narrow upper airways above and behind the base of the tongue, based on cephalometric evaluation. Two of the adolescents underwent soft tissue and or maxillo-mandibular surgery, which increased the upper airway size. Both subjects experienced no further nocturnal asthma.

Kraus (1988) cites several authors in his discussion of the following: "neurons of the 3 divisions of cranial nerve V (trigeminal) and cranial nerves VII, IX (glossopharangeal), and X (vagus) share in the same neuron pool with neurons from the upper cervical spine segments C1, C2, and C3, called the subnucleus caudalis. The pars spinalis is the portion of the subnucleus caudalis that lies in the spinal cord, and is characterized by its multiple cranial and cervical nerve root inputs and by the pronounced anatomic convergence of these systems".

The repetitive nature of microtrauma from faulty posture could conceivably develop a significant amount of stress to the neck proprioceptors, resulting in aberrant afferent information. (Krauss 1988) This faulty information could conceivably result in a faulty effect on the vagus nerve, due to the neuronal pooling.

Fascia

A large component of the human body is found by Gray (1977) to be connective tissue, which forms a continuum throughout the body. Barnes (1987) describes fascia as a tough connective tissue that spreads throughout the body in a three dimensional web from head to foot, functionally without interruption. This tissue covers the muscles, bones, nerves, organs and vessels, down to the cellular level. Travell and Simons (1983) describe each muscle fiber as being surrounded by connective tissue, as is each muscle fascicle. Normal fascia also provides a positive effect on the tone of the peripheral, autonomic and central

nervous systems. Mechanoreceptors and proprioceptors found within specialized elements of fascia report information to the spinal cord and brain on body position and movement, both normal and abnormal. Many of the substances that contribute to immune mechanisms within the body are found within the ground substance of the fascia, as described by Greenman (1996). A detailed discussion of the anatomical interrelationships of muscles, fascia, blood vessels, and nerves is found in the chapter entitled, "Muscles and Fasciae", in Gray's Anatomy. (1977)

Cailliet (1992) offers the following discussion of the functions of connective tissue: "The fact that connective tissue must support, nourish and afford defense against trauma and infection makes it a highly specialized and complex tissue. Connective tissue contains as well as comprises blood vessels and lymphatic vessels for its function of nutrition, defense and repair." Connective tissue provides pathways for nerves, blood vessels and lymphatic vessels by its fascial planes. It also contains histiocytes that participate in phagocytic activity in defense of bacterial invasion. The connective tissue is provided with various kinds of nerve fibers to fulfill its functions. Thus, the connective tissue is controlled by the nervous system. Changes in the connective tissue may be conveyed to the nerve centers and trigger regulating impulses. Composed of two types of fibers and a polysaccharide gel complex between the two fibers, the fascia serves to guard against overextension, absorb tensile forces and absorb compressive forces of movement. (Cailliet, 1982) If the fascia is restricted, forces cannot be dispersed and injury can occur.

Fascia reorganizes itself along the lines of tension imposed upon it in order to support the structure. Where there is excess stress, fascia will thicken to add support and strength. (Barnes, 1991) Therefore, malfunction of the system due to trauma, poor posture or inflammation can bind down the fascia, resulting in abnormal pressure on any or all of these body components. (Barnes 1987) Fascia's response to stress, injury or trauma can be varied; from inflammation, either acute or chronic, which can result in immobile and restrictive tissue, to biomechanical stress resulting in abnormal afferent information being sent to the brain, to biochemical and immunological changes having a general systemic effect. Thus, it can be responsible for pain and dysfunction in seemingly unrelated areas of the body.

Myofascial Release

Myofascial release (MFR) is a relatively new physical therapy technique. It draws upon a combination of concepts found in soft tissue techniques, muscle energy techniques, indirect techniques, and inherent motion craniosacral techniques in order to address the stress, strain and tightness of a traumatized fascial system that traditional therapeutic techniques often fail to relieve.

MFR has been offered as a technique that is claimed to address the fascial system. As a specialized stretching technique that is focused upon relieving soft tissue and fascial restrictions, it fosters claims which purport to allow a more normal movement pattern, and unencumbered

function of the internal organs and tissues. MFR techniques used on four patients with documented carpal tunnel syndrome resulted in a relief of symptoms, improvement of electrodiagnostic outcomes, and an increase in the dimension of the carpal tunnel as determined by measurement made following magnetic resonance imaging. (Sucher, 1993)

MFR is based on the premise that the body has an inherent self-regulating mechanism; the treatment is designed to allow this mechanism to function at its optimum. Mediated by sensitive hands, the therapist responds to feedback from the patient's tense muscles, fascia, ligaments and tendons. MFR requires the therapist to sense and work with the patient's natural body rhythms. These body rhythms result from rhythmic changes in muscle tone, pulsile forces of arterial circulation, the effect of respiration, and the cranial rhythmic impulse. (Greenman 1996) This philosophical base prevents an aggressive and unnatural forcing of the tissues and ensures that the tissues will not be overstretched or damaged. Indeed, too much pressure is self-defeating and will cause the body to have a defensive body tissue contraction. (Manheim-Kaplan and Lavett 1988)

The clinical work is accomplished through the sensitivity of the therapist's hands in feeling for the pathologic strains, which are sensed as a distinct pulling in the tissues. (Gillespie 1990) The trained therapist can also sense tissue tension and barriers. These tissues are addressed gently with direct or indirect forces, or at times a combination of both.

MFR relies upon a prolonged, low load force to the involved tissues to affect a change, and normalization, of these tissues. The instructions from various authors of this technique emphasize the gentle nature of the treatment. The technique involves applying a gentle stretch to the area until resistance can be felt. This stretch is then maintained until the soft tissues are felt to relax. This relaxation allows the therapist to move to the next area of restriction. The process is repeated until the tissues are in their fully elongated position. (Manheim-Kaplan and Lavett, 1988; Barnes, 1992)

Adverse reactions to MFR are reported to be rare and temporary. Gillespie and Barnes (1990) mention momentary dizziness, and temporary tingling in the face. A sensation of choking may be experienced briefly during the treatment. (Gillespie and Barnes, 1990) Slight soreness may be experienced, usually for no longer than a day. (Barnes, 1992) No other adverse reactions have been described in published materials.

Contraindications to use of this technique are: malignancy, cellulitis, febrile state, systemic or localized infection, acute circulatory condition, osteomyelitis, aneurysm, obstructive edema, acute rheumatoid arthritis, open wounds, sutures, hematoma, healing fracture, osteoporosis or advanced degenerative changes, anticoagulant therapy, advanced diabetes, and hypersensitivity of the skin. (Barnes, 1992)

MFR is now part of the physical therapy curriculum in an increasing number of PT schools. (Ehrett, 1988). Postgraduate courses in this technique are offered many times a year throughout the country.

A post graduate home study course was developed with the cooperation of the American Physical Therapy Association. (Manheim-Kaplan and Lavett 1988) John Barnes, PT, a developer of the technique, has instructed over 14,000 therapists in this technique. (Barnes, 1992)

Anecdotal Evidence

MFR has been offered as a technique that is useful in lessening chronic pain. Recently, an article by Gillespie and Barnes (1990) offered this technique for use with children with asthma. Numerous conversations between this researcher and Dr. Gillespie in 1992 led to the preparation of a questionnaire which was mailed to his patients who received MFR treatment and who were relieved of their asthma symptoms. Responses to the questionnaire, which indicate a decrease in the number of asthma attacks following MFR treatments, are presented in Table 1. Questionnaire responses regarding changes in medications, and any adverse reaction following MFR treatments, are presented in Table 2. The respondents indicated no adverse reactions to the treatments.

Table 1

Questionnaire Responses Regarding Asthma Episodes

Client	Age of Client When Diagnosed	Treated	Present	Yearly Asthma Attacks Prior to MFR	Since MFR	# of MFR Treatments
1	6	8	12	80	1	8
2	57	60	60	1 or 2	0	16
3	16	25	27	15 to 25 EI	0	8
4	2	20	20	daily	0	18
5	3	6	11	6 or 7	0	16
6	4	4	5	several	2 slight	9
7	41	41	42	6	20% of previous	21
8	1.5	4.5	11.5	continually sick daily meds	4	not answered
9	12	14	14	2 to 3, with constant wheezing	0, wheezing stopped	9

Table 2

Questionnaire Responses Regarding Medication Changes

Client	Medications Taken		Comments
	Prior to MFR	Since MFR	
1	theodur, slobid maxair, proventil	maxair	now has 2 cats
2	azmacort, proventil prednisone, nasalide	azmacort	able to work everyday
3	ventrol	none	more active
4	theodur 450 mg proventil, intal	0	
5	alupent, intal slobid, prednisone	0	3 or 4 hospitalizations due to asthma prior to MFR
6	extendryl, proventil, steroids	extendryl, prn	prior to MFR, 1 attack required emergency services
7	proventil, azmacort prednisone, intal	proventil, intal azmacort	
8	bactrim, slobid theophylline	erythromyosin ventolin, 2 x/yr	surgery for hernia 2° asthma, ear tubes. Now has 4 cats
9	inhaler	none	wheezing returned to a lesser extent after braces reapplied

Personal conversations with physical therapists practicing in the field (Coates, 1992; Wurn, 1992) reveal several cases of patients treated with MFR for various problems, who have additionally noticed a decrease in their asthma symptoms.

A case study describes the outcome of MFR techniques used on a four-year-old asthmatic child. By the age of 3 years, 6 months, this child had had 17 asthma attacks. Despite oral and inhaled medications, 15 of these asthma attacks required the use of oral steroids to control and relieve the symptoms. (Silva, 1995) In the three years following treatment, this child had one asthma attack that necessitated the use of oral steroids. This occurred 11 months after MFR treatments. Health care expenditures for this child prior to treatment averaged $2200.00 per year, health care costs for the three years following MFR treatments averaged less than $150.00 per year. (Silva, unpublished data, 1995).

Summary

The head, neck, upper quarter and pulmonary system are heavily encased in fascial tissue, (Hertling 1983) which surrounds every cell, tissue and organ in the human body. (Cailliet, 1982; Gray, 1977; Travell & Simons, 1983). Tightness of the fascia can cause pain and dysfunction throughout the body. (Barnes, 1987) Soft tissue abnormalities of the upper airway seem to contribute to asthma attacks. (Guilleminault et al. 1988) Anecdotal evidence suggests that a treatment technique that addresses fascial and soft tissue tightness may have a

beneficial effect on the asthmatic patient. Clinical studies of this treatment technique in addressing childhood asthma have not yet been published.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this study was to examine a specific physical therapy intervention on the number of asthma episodes and medication needs of asthmatic children. The specific physical therapy interventions utilized, myofascial release techniques, are non-traditional stretching techniques designed to relieve tension and tightness of the connective tissue throughout the body. Massage to the posterior thoracic region was given to one group of children as a control treatment; the myofascial release treatment was considered the experimental group.

Subject Selection

Ten asthmatic children from a local Midwest area were recruited to participate in this study. Qualification criteria included:

1. The participant had been diagnosed with asthma by their primary physician at least two years previously,

2. Their primary physician agreed to allow participation in this study.

3. Their parent would be able to provide information on the number of asthmatic episodes and the amount and kinds of medications taken for asthma over the past two years.

4. The participant was taking medications to control asthma symptoms on an as needed basis, and

5. The participant's parent was willing and able to attend all treatment sessions, and accurately document medications needed and asthma episodes for the 12 months following treatment.

Children needing daily prophylactic medications were considered for inclusion in the study only with the written understanding that their prophylactic medication regime would not be altered during the study, nor after the conclusion of the study, without the expressed direction of their physician.

The parent of each child was given an informed consent form to read and sign. A sample is included at Appendix A, and a copy of the signed consent form was given to the parent. Each parent filled out a brief patient history questionnaire, indicating the frequency of past asthma episodes, and the amount and kinds of medications needed during those episodes. (Appendix B)

Once the children were identified, the data was examined to match the children into pairs. Due to the low number of subjects, these pairs were approximated, based on amounts of medications and number of asthma episodes. The matching was not close enough to be considered for matched-pair statistical analysis. The children were then randomly assigned in matched pairs to one of the groups; either the massage group or the myofascial release (MFR) group. The low number of subjects prompted the researcher to load the experimental group heavily, that is, one of the control group subjects was purposely put into the

experimental group, in order to give the experimental group a larger subject number.

Treatment

The investigating therapist saw all the children in the Oklahoma State University Wellness Center. All children were scheduled twice a week for 8 weeks. Those children missing a session were allowed to make up the session at a later date, thus giving each child a total of 16 sessions. Each treatment lasted 25 – 30 minutes. A medical prescription signed by James Anderson, DO, was obtained for each participant, according to the Oklahoma Physical Therapy Practice Act. Each child's parent was required to accompany the child during all sessions with the physical therapist. Each parent was requested to carry with them the medications their child might need in the event of an acute onset of asthma. During the course of the sessions, no child needed asthma medication during the treatment session.

Each child in the massage group was positioned in a portal-pro chair, which supports the semi prone position. Two children removed their shirts, so that the posterior upper thoracic and cervical area was exposed. The therapist applied a small amount of lubricating lotion to the area, and followed with a massage to the area. At the conclusion of the session, the child was toweled dry, and allowed to dress. Two children felt very uncomfortable in removing their shirt; therefore the massage was given with the shirt on. The massage, following the long

axis of the muscle fibers described by Beard and Wood (1964), was to be gentle in nature, as massage with deeper pressure has been implicated in lessening asthmatic symptoms in children. (Field, 1995) However, the light pressure tickled all the children, and a deeper pressure than originally planned was applied.

Each of the children in the MFR group was positioned supine. The child received the following techniques as each child needed: temporal technique, the mandibular technique, the maxillary technique, the hyoid technique, respiratory diaphragm release technique, and the thoracic inlet release technique, as described by Gillespie and Barnes. (1990) Detailed descriptions of each technique can be found at Appendix C. The amount of time spent with each technique varied according to the individual child's needs.

Data Collection

Each parent was given a calendar to fill out which documented medication needs and asthmatic episodes of the child during the eight weeks. This calendar was continued for the following 12 months. Parent reports have been found to be acceptable for most research purposes, when compared to pediatricians' records. (Pless, C.E., and Pless, B, 1995) In the event that it was necessary to verify information, permission was obtained to contact the child's physician only for information directly related to this study. Initially, physicians were to be kept informed of the condition of their patients and of the progress of the

study. However, the physicians involved asked that they not be told of their patients' group status or treatments given. They felt that they could more objectively assess the child's changes (if any) if they were unaware of which group the child was in.

Statistical Analysis

The information gathered from the parents of the subjects included the number of asthma episodes for the two years prior to the study. This number was averaged, and compared to the number of asthma episodes in the year following the treatments. The data was subjected to appropriate t-test analysis. A significance level of .05 was selected.

University Approval

The Oklahoma State University Institutional Review Board (IRB # ED–96-141) for Human Subjects Research approval was sought prior to the initiation of this study. Expedited status was granted October 3, 1996. (Appendix D) Due to the length of this study, the IRB granted an extension (ED-98-115) on May 28, 1998. (Appendix E)

CHAPTER IV

RESULTS AND DISCUSSION

This chapter outlines the results obtained from the data supplied by the parents of the subjects for the two years preceding the treatments, and for the year following the treatment phase. The parents were asked to supply information concerning the number of asthma episodes their child experienced during the aforementioned time periods, the medication needs, and any comments their child made concerning the treatments themselves.

The purpose of this study was to examine a specific physical therapy intervention on the number of asthma episodes and medication needs of asthmatic children. The specific physical therapy interventions utilized, myofascial release techniques, are non-traditional stretching techniques designed to relieve tension and tightness of the connective tissue throughout the body. Massage to the posterior thoracic region was given to one group of children as a control treatment; the myofascial release treatment was considered the experimental group.

Results

The parents, prior to the start of the treatments, completed a patient history questionnaire. (Appendix B). This information was used to match subjects into pairs. Due to the low number of subjects, these

pairs were approximated, based on amounts of medications and number of asthma episodes. The matching was not close enough to be considered for matched-pair statistical analysis. The parents were given a standard pocket calendar to record the medication needs and asthma episodes for the year following the study. The parents returned the calendars for analysis to the researcher 12 months after the treatments for the study concluded.

From these data, the researcher was able to determine the number of asthma episodes for the 2 years preceding treatment and the year following treatment, and the medication needs of the subjects for the same time frame. The number of asthma episodes preceding the study was averaged for the two years, to carry out the t-tests. These data are detailed in Table 3.

The study began with 10 subjects. Two subjects, one from each group, were excluded from data analysis. These two children were seen by additional physicians, asthma specialists, and started on new medication regimes during the year following conclusion of the treatments. The data from these two subjects were not included in the statistical analysis. It cannot be determined if any changes in their symptoms or medication needs were a result of the new medications, or from the study treatments. As a result of this subject elimination, the data was analyzed on a control group of 3 and an experimental group of 5. The ages of the control group ranged from 6 to 10, with a mean of 8.3 years. The ages of the children in the experimental group ranged from 6

to 12 years of age, with a mean of 9.8 years. The ages of all the children ranged from 6 to 12 years of age, with a mean of 9.25.

A paired t-test was computed to determine whether there was a significant difference in the number of asthma episodes before and after treatment within each group. The .05 level of confidence was used to determine the value of the t. The data concerning the results of the t-test on Table 4 indicate a mean difference of asthma episodes before and after treatment that meets the .05 level of significance within each group. Both the control group, (n=3), and the experimental group, (n=5), improved to a significant degree.

A between groups analysis of pre-treatment and post-treatment means was conducted, with the results shown in Table 5. The pre-treatment means between the two groups showed no significant difference ($p > .05$). The difference in post-treatment means of the control and experimental groups failed to meet significance of .05; however the calculated value was .0594, which is near significance.

A paired t-test was computed on the data from the entire group of children, (n=8), allowing each child to be his/her own control. The results from all subjects, depicted in Table 6, were calculated to be 0.0068. This would offer significance at the $p < .01$ level. Although this study intended to determine the effectiveness of one type of physical therapy intervention as compared to another, the results of the entire group calculations would support physical therapy intervention of either type.

Table 3

Asthma Episodes Pre and Post Treatment by Control Subject and Experimental Subject

Subject	# of asthma episodes 2 years prior to treatment	average per year prior to treatment	# of asthma episodes after treatment
C1	5	2.5	2
C2	8	4	2
C3	12	6	4
E1	4	2	2
E2	12	6	2
E3	4	2	2
E4	6	3	1
E5	6	3	1

Table 4

Means and p-Values Within Groups for Number of Episodes Pre and Post Treatment

	Mean Before Treatment	Mean After Treatment	Difference	p Value
Control (n=3)	4.1664	2.6667	-1.5000	0.0477 *
Experimental (n=5)	3.2000	1.6000	-1.6000	0.0496 *

* $p < .05$

Table 5

Means and p-Values Between Groups for Number of Episodes Pre and Post Treatment

	Control Mean	Experimental Mean	Difference	p Value
Control vs experimental pre treatment	4.1667	3.2000	-0.9667	0.2306
Control vs experimental post treatment	2.6667	1.6000	-1.0667	0.0594

Table 6

Means and p-Values All Subjects for Number of Episodes Pre and Post Treatment

	Mean Before Treatment	Mean After Treatment	Difference	p Value
All subjects (n=8)	3.5625	2.0000	-1.5625	0.0068 **

** $p < .01$

The medication needs of the children could not be described in a manner that would lend itself to numeric analysis. All of the children experienced a decrease in the amount of medications needed, both in daily needs and in additional medications needed during an asthma episode, as detailed in Table 7.

Medications added during an asthma episode decreased in 5 of the 8 subjects. Subject C1 reported a decrease in breathing treatments from 6 – 8 per day total, to needing 3 breathing treatments during the first asthma episode, which occurred 3 months after conclusion of the study treatments, then needing 4 breathing treatments during the episode which occurred 11 months after completion of the study treatments. Subject C3 reported needing less than half the number of treatments. Subject E2 decreased from 26 treatments per episode to 4 treatments the first episode, occurring 1 month after completion of the study treatments, then 18 the second episode, occurring 11 months after completion of the study treatments. Subject E3 decreased from needing 14 treatments per episode to only 2 per episode, occurring at 2 and 10 months after completion of the study treatments. Subject E5 reported that medication needs were lessened, and the medications were tapered faster than prior to the treatments.

Daily medications were decreased in 3 of the 5 subjects requiring daily medications. Subject C1 was able to discontinue the use of daily Slo-Bid. Subject C3 discontinued the Vanceril inhaler and Beconase, Benadryl and Robitussin. Subject E3 was able to discontinue the use of Nasalcroym.

Table 7

Medication Needs Prior To and Following Treatment by Subject

	Prior To Treatment		Following Treatment	
	Daily Medications	Additional Medications	Daily Medication	Additional Medications
C1	Slo-Bid, 4 breathing treatments/day	6 - 8 breathing treatments/day	none	1st episode 2 breathing treatments x 2 days. 2nd - Slo-Bid x 3 days, 3 breathing treatments
C2	none	Proventil, Saline in nebulizer 4 x's/day, Proventil inhaler	none	1st episode - 8 days, used nebulizer every 4 hours. 2nd episode used inhaler every 4 hours x 3 days.
C3	Benadryl RobitussinDM, Ventolin,Intal, Vanceril Inhalers Beconase AQ	Volmax, increase inhaler to 3 times/day Intaal, Ventolin nebulizer daily	Intal & Proventil 2 puffs, am & pm	Less than half the # of treatments A lot fewer treatments
E1	Benadryl RobitussinDM, Ventolin,Intal, Vanceril Inhalers Beconase AQ	increase inhalers to every 4 hours, Volmax		
E2	none	Intal with Albuterol, nebulized, every 3-4 hours, decreasing to 2 times/ day, total of 5 - 7 days	none	1st: 2x/day x 2 days; 2nd: 4 - 7 hrs x 3 days; then once/day x 2 days
E3	Nasalcroym	Albuterol inhaler, 2 puffs. 2 x's/day approx. 1 week	none	each episode needed only 2 puffs Albuterol, twice due to triggers
E4	none	Albuterol inhaler, 2 puffs every 4 hours prn	none	inhaler once
E5	Beconase 2 puffs, 2 x's day	Proventil, Asmacort 2 puffs, 3 x's/ day x 14 days tapered	Allegra D, Beconase BID	Asmacort 4 puffs 2 x day Proventil 2 puffs 2 x day, tapered after 5 days

Parents were asked to record any comments their child made concerning the actual treatment. Two of the children in the myofascial release group stated that the hyoid release technique hurt a little. Another myofascial release child commented that the session was not unpleasant, but wasn't great either. A fourth child in that group reported feeling relaxed and slightly lightheaded at the conclusion of the first two treatments, but not after the rest of the sessions. The massage group children, other than being ticklish with a light massage pressure, had no other comments regarding their treatments.

Discussion

This study was undertaken to determine, in a controlled manner, whether physical therapy intervention, in the form of myofascial release techniques, would be beneficial in the management of childhood asthma. The control group was given a massage, in order that each group receive a "hands-on" technique.

The number of subjects (n=8) for this study was small; recruitment was hindered by a common perception that this effort would be too time-consuming, as would the record keeping. Suggested record keeping was kept to a minimum; in order to reduce the tediousness and time commitment, with the hope of reduction of drop out.

The number of asthma episodes for the year following completion of the treatments decreased for both groups. The amount of medication needed also decreased for both groups. Changes in the experimental

group, those receiving myofascial release techniques, could be anticipated based upon the anecdotal evidence, however, changes in the control group, those receiving massage, were unanticipated. Based on the work reported by Field in 1995, massage reduced asthma episodes in children over a short-term basis, the month-long period of the treatments. No study had been done to determine long term effects of a short period of massage. In 1998, Field et al reported improved pulmonary functions in children with asthma following massage therapy. This study did not indicate a decrease in the number of asthma episodes for the children, and reported only those data gathered at the start and the end of a month long study.

A possible explanation for the improvement in the massage group could be found in a review article by Rowane and Rowane (1999), that discusses osteopathic approaches to asthma, including soft tissue techniques to the paravertebral muscles of the thoracic region. It is possible that during this study, the massage given to the control group could be considered soft tissue techniques. The techniques discussed by Rowane and Rowane were described for use in the emergency room of a hospital; no long-term benefits were discussed.

Another consideration for the results of this investigation is the concept of maturation, which threatens internal validity. A chance exists that the improvements of the children were a result of their physical maturation, rather than the treatments they received. The children ranged in age from 6 to 12 years of age. The mean age of the control group, 8.3 years, does not differ significantly ($p = .214$), from the mean,

9.8 years, of the experimental group. That the entire group of mixed age children, (m= 9.25), would improve at a significance level of $p < .01$, may show maturation. However implausible, it must be considered. The between groups analysis shows a p value of 0.0594 when comparing the control to the experimental groups post treatment. This is not significant, however it does indicate a strong trend towards the benefits of myofascial release. This near significance might argue against maturation as the causative factor in the improvement seen in the children, as both groups were exposed to the same maturation period. The rate of improvement in both groups is also much more rapid than would be seen in improvement due solely to maturation.

Perhaps as significant as the changes indicated by the data, are the comments made by the parents during the year following the treatments. The parent of a child in the myofascial release group recorded these journal entries:

> "He played in the snow for 1 hour with his dad. This time last year (and the prior 3 yrs), that kind of activity would bring on an asthma episode, plus a cold and nightly breathing treatments for at least 3 days, sometimes up to 1 1/2 weeks....We've been playing basketball a few nights. Last year and prior years, exercise would bring on an asthma attack, with difficulty breathing...Going to visit MeMa for a week. She and Pops smoke all day long and all night long. The dr. says not to leave him in that kind of environment because it's very bad for his asthma. The visit will be next month. Should I let him Go?...Here's the test: He is going to spend 5 – 7 days with Grandma. Both grandparents and all visitors smoke cigarettes in the house all day and night...Been at Grandma's smoke filled house 3 days...I called every night to check. No asthma symptoms. But he stayed outside most of the day – so he was only exposed to the smoke for short periods during the day then all night. NO ASTHMA....I just realized that vigorous athletic activity would leave him breathless in the past. Not Now! He runs, jumps, and plays at recess and at home, with absolutely no breathing difficulty. I had forgotten about that. We had to limit his running around in the past, but not this summer. He's perfectly normal, just like all the other kids...7th birthday. No asthma attacks since April. This has been a great year,

> and we owe it all to Mary Silva and her asthma massages. They really do work! Of course I am assuming that I was not in the placebo group. Either my son outgrew his asthma or it is a direct result of the treatments....Usually the months of Sept, Oct Nov Dec Jan and Feb are accompanied by a snotty nose, cold and asthma treatments Not this winter!...An important test: Tomorrow we are going to MeMa and Pops' house again – for 2 days – closed in the smoke...At MeMa's...At MeMa's...No asthma symptoms during or after the visit."

The mother of a child in the massage group visited with the investigator at a social function several months following completion of the treatments. She mentioned that during an asthma episode following treatment, the child coughed unusually hard and often. The only thing that helped quiet the child's cough was for the mother to massage the child's back, as she had observed during the study treatments.

This study intended to investigate the efficacy of myofascial release techniques in childhood asthma. Despite limitations of small groups, less than fully detailed parental reports, and the unknown consequences of maturation of the subjects, this study suggests that physical therapy intervention can be helpful in lessening asthma symptoms and medication needs in children. The children in each of the groups improved at a statistically significant level. Taken as a whole, the children improved at the $p < .01$ level. This would support the argument that physical therapy intervention be included in the comprehensive management of childhood asthma.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

This project was designed to compare the effects of two physical therapy treatment techniques, myofascial release and massage, on the asthma symptoms and medication needs of children. Physical therapy intervention in childhood asthma is not a standard practice, and the literature has no studies to indicate its efficacy. This study was preceded by anecdotal evidence. Subjects were 10 asthmatic children, ages 6 – 12, from the local Midwest area. The treatments were carried out on a twice a week basis for 8 weeks, for a total of 16 treatments. The parents were then asked to maintain a symptom and medication log for the year following completion of the treatments, in order to record the effects of seasonal triggers. The number of asthma episodes for the two years preceding and the year following treatment was analyzed for the control and experimental groups. Medication needs were recorded.

Findings

Treatments were given to 10 subjects, however only 8 presented data that could be analyzed for this study. The data from two children were excluded after they were started on new medications during the year following the treatments. The children were grouped into control (the massage treatment) and experimental (the myofascial release treatments), and the number of asthma episodes was analyzed using a paired t-test at the .05 level of significance.

Based on this study, the following findings are presented:

1. There was a statistically significant ($p < .05$) difference in the number of asthma episodes in the year following treatment in the group receiving massage to the posterior thoracic area.

2. There was a statistically significant ($p < .05$) difference in the number of asthma episodes in the year following treatment in the group receiving myofascial release treatments.

3. Both groups reported a decrease in the amount of medications needed during asthma episodes, and in their daily medication regimen.

4. The two groups combined showed a decrease in the number of asthma episodes in the year following treatment at a significance level of $p < .01$.

Conclusions

Childhood asthma symptoms and medication needs can be positively affected by physical therapy intervention. Within the limits of this study, the following conclusions were drawn:

1. Massage, using up to moderate pressure, to the posterior thoracic area of asthmatic children can decrease the number of asthma episodes and the medication needs.

2. Myofascial release techniques can decrease the number of asthmatic episodes and medication needs of asthmatic children.

The rates of asthma are increasing in this country. Despite advances in pharmacology, even the death rate from asthma is increasing. At this time, medical management of asthma has not included physical therapy intervention. This study, despite its limitations, would indicate that physical therapy intervention in the form of myofascial release and/or massage to the posterior thoracic area should be included in the comprehensive management of asthma, particularly in childhood asthma. Myofascial release techniques are gentle, with only mild, temporary discomfort reported as side effects. Massage can be taught to the parents for a home program. Two safe, gentle and apparently effective techniques to reduce the medication needs and number of asthma episodes among children are available, and should be incorporated into the asthmatic's management.

Recommendations

The following recommendations for further research can be made as a result of this study:

1. The study should be expanded to include a larger subject population.

2. The study should be expanded to include a third group to serve as a true control group.

3. The study could compare myofascial release, soft tissue mobilization in the form of deep pressure massage, a combination of both treatments, and a control group.

4. The study should require more detailed records from the parents.

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APPENDIXES

APPENDIX A

INFORMED CONSENT

Oklahoma State University
Consent to Participate in Research Project

I,_____, hereby allow my child, _____, to participate in the following research program. I authorize the co-investigator to perform the following procedure(s) on my child:

I understand that medical permission is needed for my child to participate in this study. I will allow my child to receive the physical therapy techniques, as permitted by our primary physician, and as administered by Mary Silva, a registered physical therapist, licensed in the state of Oklahoma. I understand that these techniques include palpation, massage, and/or observation. I understand that there will be two treatment groups, and that my child will be assigned to one of these groups on a random basis. One group will receive massages to the upper back area, the other group will receive myofascial release techniques to the head, neck and upper body. Myofascial release techniques are considered an alternative form of stretching. Both techniques are used in physical therapy clinics in this country.

I will provide information concerning my child's asthma for the past two years. This will include medications used, number of asthma episodes and comments which will provide an indication of the severity of the asthma episodes. I agree to keep a record of my child's physical condition and medicinal needs for the eight weeks of this study and for the year following completion of the study, and to be available for a follow-up interview in one year. I hereby authorize my child's physician to verify information I give, and to release to the investigator or therapist information about my child which directly relates to this study.

I understand that these treatments are considered to be alternative treatment modalities in the management of asthma, and I understand that I am not to try these techniques with my child at home. I will continue to manage my child's asthma with the prescribed medication regime as established by my primary pediatrician. I will carry with me to the sessions medications which may be needed in the event of the onset of asthma. I will notify the therapist or investigator if my child develops a fever, or symptoms of asthma. I understand that the therapy sessions will be conducted only when my child is free of asthma or symptoms of fever or other illness.

My child will be available to be seen in the physical therapy department at the Wellness Center at Oklahoma State University for approximately 30 minutes, twice a week for 8 weeks. I agree that my child will be accompanied by a parent, and a parent will be present at all sessions during this investigation.

Records and results of this study will protect my family's confidentiality by not identifying me or my child by name. This study has been approved by the Institutional Review Board at Oklahoma State University. The information gained from this study will be used for research, publication and educational purposes.

I recognize that the major benefit that I will receive is a possible reduction in the asthma symptoms of my child. I understand that there are possible risks to my child, such as soreness, momentary dizziness, temporary tingling of the face, or a sensation of choking.

This is being done as part of an investigation entitled, "Physical Therapy Intervention In Childhood Asthma: Myofascial Release Techniques And Massage".

The purpose of this study is to determine if specific physical therapy techniques can lead to a decrease in the asthma symptoms of children.

There is no charge for the techniques to be administered for this study.

I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation for my child at any time without penalty after notifying the investigator

I may contact the therapist, Mary Silva, should I wish further information about this research, at (405)742-5708, or (405) 377-2278. I may also contact the principle investigator, Bert Jacobson, Ed.D. at (405) 744-5500, or Gay Clarkson, University Research Services, 305 Whitehurst, Oklahoma State University, Stillwater, OK 74078; telephone (405) 744-5700.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date _____ Time _____ (am/pm)

_____

Signature of Parent (mother/father)

_____

Signature of Participant

I certify that I have personally explained all elements of this form to the subject and the subject's parent before requesting the parent's/ participant's signature.

_____ _____

Signature of Investigator, or authorized representative Date

APPENDIX B

PATIENT HISTORY

Name: _____ Parents _____

Address _____ Phone _____

Date of birth _____ Male/Female _____ Age _____

Age when diagnosed with asthma___

Number of asthma episodes in the past 2 years _____

Current Daily Medications, and amounts _____

_____

Medications added during an asthma episode _____

_____

_____

Additional medical problems _____ hospitalizations, etc. _____

_____

Birth history: hours of labor: _____ C-section? yes/no _____

Additional Information: _____

Known or suspected triggers Allergies exercise cold other _____

History of thumb sucking? _____ Orthodontic trauma or treatment _____

Special diet or lifestyle restrictions__

_____

Additional medical testing or treatment _____

_____

Pets in the House _____ Smokers in the House _____

Please comment on the nature, and severity of your child's asthma, and any additional information you feel I should know.

APPENDIX C

DESCRIPTION OF MYOFASCIAL RELEASE TECHNIQUES

DESCRIPTION OF MYOFASCIAL RELEASE TECHNIQUES

This description of the techniques used in this study is adapted from Gillespie and Barnes (1990).

For all techniques, the patient is positioned supine.

The following techniques are performed with the therapist seated comfortably behind the head of the patient:

Temporal Release:

Hand positions:

The left hand is placed underneath the head in the left temporal and occipital bone area; the right hand is placed in the right temporal and occipital bone area. Each thumb is in contact with the mastoid process of the temporal bone.

Release:

A fascial pull on the osseous structures may be perceived. The bones are allowed to move in the motion, without force from the therapist towards a correct position, until movement has ceased.

Mandibular Release:

Hand positions:

One hand is placed under the occipito-cervical area; the other hand gently cradles the mandible.

Release:

A sense of pulling on the mandible may be felt. Allow the mandible to move into the new position, also any secondary or tertiary positions, until movement ceases.

The following techniques are performed with the therapist seated comfortably beside and facing the patient:

Maxillary Release:

Hand positions:

The posterior hand is positioned under the occipito-cervical area; the anterior hand holds the two maxillary bones using the thumb and index finger.

Release:

Gently feel for any shifting of the tissues in both hands. Follow the movement until the movement ceases.

Hyoid Release:

Hand positions:

The posterior hand is placed under the occipito-cervical region; the anterior hand gently holds the hyoid bone between the thumb and index finger.

Release:

Gently feel for any shifting of the tissues in both hands. Follow the movement until the movement ceases.

Thoracic Inlet Release:

Hand positions:

Posterior hand is positioned under the cervical/thoracic junction, covering C7-T2; the anterior hand covers the sternoclavicular joints, suprasternal notch, and upper costachondral junctions.

Release:

The posterior hand acts as a firm supportive foundation and the anterior hand applies very light anterior/posterior compressive force of 5 grams or less (the weight of a nickel). Any perceived inherent motion should be followed, while continuing to apply light compressive force until quiescence is achieved.

Respiratory Diaphragm Release:

Hand positions:

Posterior hand is placed under the thoraco-lumbar junction; anterior hand is placed over the epigastrium, the xiphoid process and the anterior inferior costal margins.

Release:

The posterior hand acts as a firm supportive foundation and the anterior hand applies very light anterior/posterior compressive force of 5 grams or less (the weight of a nickel). Any perceived inherent motion should be followed, while continuing to apply light compressive force until quiescence is achieved.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 08-28-96 **IRB#: ED-96-141**

Proposal Title: PHYSICAL THERAPY INTERVENTION IN CHILDHOOD ASTHMA: MYOFASCIAL RELEASE AND MASSAGE

Principal Investigator(s): Bert Jacobson, Mary Silva

Reviewed and Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature: _____ Date: October 3, 1996
Chair of Institutional Review Board

10-2-96

APPENDIX E

IRB RENEWAL

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 05-20-98 **IRB #: ED-98-115**

Proposal Title: PHYSICAL THERAPY INTERVENTION IN CHILDHOOD ASTHMA: MYOFASCIAL RELEASE AND MASSAGE

Principal Investigator(s): Bert Jacobson, Mary Silva

Reviewed and Processed as: Expedited with Special Population

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

==========

Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Signature

Chair of Institutional Review Board

Date: May 28, 1998

cc: Mary Silva

VITA

Mary Psinakis (Baker) Silva

Candidate for the Degree of

Master of Science

Thesis: PHYSICAL THERAPY INTERVENTION IN CHILDHOOD ASTHMA: MYOFASCIAL RELEASE TECHNIQUES AND MASSAGE

Major Field: Health, Physical Education and Leisure

Biographical:

Personal Data: Born in New York City, New York, on December 5, 1953, the daughter of George and Evelyn Psinakis.

Education: Graduated from Miami Springs Senior High School, Miami Springs, Florida, in June, 1971; received Associate of Science degree from Miami-Dade Community College, Miami, Florida in June, 1972; received Bachelor of Science degree in Physical Therapy from the University of Florida, Gainesville, Florida, in August, 1975. Completed requirements for the Master of Science degree with a major in Health, Physical Education and Leisure at Oklahoma State University in December, 1999.

Professional Experience: Staff physical therapist, Shallowford Community Hospital, Chamblee, Georgia, 1975 - 76; Research physical therapist, Emory University Regional Rehabilitation Research and Training Center, Atlanta, Georgia, 1976 - 79; Staff physical therapist at: Tidewater Rehabilitation Institute, Norfolk, Virginia, 1979 - 80; Central Alabama Rehabilitation Center, Montgomery, Alabama, 1980 - 81; Baptist Medical Center, Montgomery, Alabama, 1981 - 83; Baptist Medical Center Home Health Services, Montgomery, Alabama, 1983 - 87; Stillwater Medical Center Stillwater, Oklahoma, 1989 - present

Numerous publications and presentations associated with Emory University Rehabilitation Research and Training Center.